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OF THE

# American Philosophical Society

Held at Philadelphia for Promoting Useful Knowledge

VOLUME 96, NUMBER 4 AUGUST 22, 1952

## STUDIES OF HISTORICAL DOCUMENTS IN THE LIBRARY OF THE AMERICAN PHILOSOPHICAL SOCIETY

THE AMERICAN PHILOSOPHICAL SOCIETY
INDEPENDENCE SQUARE
PHILADELPHIA 6
1952

The *Proceedings* of the American Philosophical Society is published as an annual volume and ordinarily is issued in six numbers. An author desiring to submit a manuscript for publication should send it to the Editor, Luther P. Eisenhart, American Philosophical Society, 104 South Fifth Street, Philadelphia 6, Pa.

The annual subscription price is five dollars; combined with a subscription to the *Transactions* the price is ten dollars. Individual copies of the *Proceedings* are offered for sale. This issue is priced at one dollar.

LANCASTER PRESS, INC., LANCASTER, PA.

# STUDIES OF HISTORICAL DOCUMENTS IN THE LIBRARY OF THE AMERICAN PHILOSOPHICAL SOCIETY

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## NOTE ON THE PAPERS ON AMERICAN INDIAN LANGUAGES AND ARCHAEOLOGY

The papers in American Indian linguistics, archaeology, etc., are of much more than usual significance. At the same time, they represent an important aspect of the Society's American Indian program inaugurated, several years ago, after the broader interpretation of the terms of the Phillips bequest. Under the new ruling, the Society resumed its traditional interest, which began with President Jefferson, Heckewelder, Du Ponceau, and their friends, in American Indian languages and culture.

Dr. Swadesh here presents a new approach in problems determining the chronology and the interrelation of American Indian groups through the study of basic language forms. It has points of similarities and differences with methods and criteria applied by scholars in the study of Indo-European languages. "The main relationships in the Indo-European and other well studied language families," writes Dr. Voegelin, "have been based on the famous comparative method developed in the nineteenth century. In addition to this, relationships between languages have been studied in terms of vocabulary similarities; but these have always been unsatisfactory because there were no adequate controls or theoretical considerations which could give structure to the vocabulary comparisons. Finally, Edward Sapir made suggestions about the genetic relationships of languages based on large structural similarities. Swadesh now proposes that information about the genetic interrelationships of language can also—and more quickly—be obtained by studying the amount of similarities in selected parts of the vocabulary; from this he infers change through time and perhaps a calendar for observed changes." Although projected here as a new yardstick in the determination of relationship, and chronology, Dr. Swadesh has already demonstrated its extraordinary possibilities.

Applying archaeological tests in the study of the artifacts of a paleo-Indian-fluted-point-site in eastern Pennsylvania, Dr. Witthoft supplies the first detailed report covering this earliest known human occupation of the Northeast, and the first broad, comparative study of archaeological remains of that antiquity in North America. His evidence pushes back the date of the peopling of this part of the continent to at least ten or twelve thousand years ago, more than six thousand years earlier than has hitherto been supposed.

To these basic discoveries in American Indian chronology and relationships, Dr. Wallace, in a sequel to his former article, "They Knew the Indian: The Men Who Wrote the Moravian Records," here reveals the Indian as a very different person from the "blood-dripping, posturing savage of a popular convention derived from Fenimore Cooper's fiction."

This historically more accurate and attractive picture of the Indian is, moreover, in closer accord with the impressions that emerge from Charles Cooke's analysis of six thousand Iroquois names, and the portrait of this veteran Mohawk scholar by Canada's foremost ethnologist and Iroquois linguist, Marius Barbeau. Cooke's article, with the manuscripts and records, which are now deposited in our Library, brings to fruition the work of a lifetime, and we regret that his expressions of personal gratitude to friends and associates cannot be included here.

Dr. Voegelin's penetrating analysis of "The Boas Plan" on the presentation of anthropological linguistics, is of especial interest to the Society because of the steady growth of our American Indian language materials, much of which is closely associated with the Boas Collection. "Boas had a real model which could be forced, as it were, but could also be used as a real measure of differences at phonological and morphological levels. Boas himself never explicitly constructed the model; he expected great diversities in American Indian languages; instead, however, his model furnished a single coordinate system from which to view the existent diversities." In addition, Dr. Voegelin's survey of the relations of the different authors to the "Introduction and Grammars" in the *Handbook* reveals much valuable, and more or less fugitive, information on the personal element in the historiography of American Indian linguistic and anthropological science.

W. E. L.

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# FRANKLIN'S *AMERICAN INSTRUCTOR*

## Early Americanism in the Art of Writing

WILLIAM E. LINGELBACH

Librarian of the American Philosophical Society; Professor Emeritus of History, University of Pennsylvania

THE art of writing was so definitely one of Franklin's major interests that it might well be assumed that the subject had long ago been exhausted by one or other of the students of the "many-sided Franklin." This is far from being the case. For some inexplicable reason, the subject has been quite neglected. While Franklin's literary style has received more or less satisfactory attention, virtually nothing has been written on his handwriting and calligraphy, or on his remarkable contribution to the development of the art of writing in America. How, otherwise, account for the fact that a volume whose most significant parts are by Franklin himself, has been quite overlooked. The discovery of a new Passy imprint causes a stir among Franklin scholars and typographers. Much time and scholarly research is being devoted to the discovery of anonymous pieces by Franklin in American, English, and French newspapers revealing an amazing story of his effective propaganda at home and abroad. Yet the identity and significance of *The American Instructor* . . . , by "the elusive George Fisher," really a Franklin book, has not heretofore been more than suspected.

During the last year of his active business as printer and publisher in Philadelphia, Franklin arranged for the publication of a manual, *The American Instructor, or Young Man's Best Companion,* by George Fisher. Although well advertised at the time in two issues of the *Pennsylvania Gazette* of 1748, it has escaped the notice of Franklin's biographers. This is the more extraordinary, because, quite apart from the usual rules and instructions on reading, writing, and arithmetic in manuals of this character, *The American Instructor* carried two hitherto unsuspected Franklin pieces, and, what I believe to be, the first printing of two others. One of these is none other than the well known *Advice to a Young Tradesman, written by an Old One,* later republished scores of times, and translated into many foreign languages.

As a result of these discoveries, this study, which began with the investigation of Franklin's handwriting, and matters associated with his calligraphy,[1] has been expanded into one of broader historical and bibliographcial import, to include, first, some comments on Franklin's writing in relation to the general subject; second, the story of *The American Instructor;* third, the Franklin pieces found in *The Instructor;* and fourth, an analysis of Franklin's handwriting with an explanation of certain misconceptions about his autograph, a matter of especial interest to collectors and custodians of Frankliniana.

### I

### FRANKLIN'S UNIQUE ROLL IN THE ART OF WRITING

The years immediately before and after 1748, mark, not only Franklin's withdrawal from printing and publishing, but the beginning of his devotion to science and politics, made possible by financial independence from the exactions of the routine of business. His experiments in electricity were already absorbing most of his spare time, when *The American Instructor* appeared as one of the first imprints of his newly formed partnership "B. Franklin and D. Hall." The results of the scientific experiments communicated by Franklin to his friend, Peter Collinson, and through him to the Royal Society, were published in 1751 as *Experiments and Observations on Electricity.* They aroused great interest among scientists and scholars of the day, and Franklin quickly became an international figure. Later, he gained a similar distinction in politics and diplomacy, till the reception accorded him and his ideas must have appeared like an answer to his famous prayer:

> God grant that not only the love of Liberty but a thorough Knowledge of the Rights of Man

[1] Lingelbach, William E., B. Franklin and the art of writing, *Autograph Col. Journal* **4**(3) : 3–9, 1952.

> may pervade all Nations of the Earth, so that a Philosopher may set his Foot anywhere on its Surface, and say "This is My Country."

By his intuitive understanding of human nature, and the essentials in the intricacies of diplomacy, he was able to bring about the decisive intervention of a Bourbon monarch on behalf of a revolt against royal authority, and to lay the basis for winning the peace once military victory was assured. After his return from his successful diplomatic mission, at the age of seventy-nine, his wisdom and prestige as the President of Pennsylvania contributed much toward the adoption of the Constitution and the consolidation of the Republic. Meanwhile, his great reputation gave added prestige and momentum to the acceptance of the homespun ideas of "Poor Richard," as the economic and social philosophy of America for the next hundred years.

In a most unusual manner, therefore, Franklin represents the transition from the old order of western civilization, with its survival of feudalism, caste, and special privilege, to the new age of toleration, freedom of thought, and freedom of enterprise under the impact of the discoveries in science and invention. As a philosophy of life and government it is, of course, in striking contrast to the alien ideologies and totalitarian dictatorships of the present century. Franklin's writings, therefore, have an interest and significance very much broader than that of most of the great men of history whose autographs are of concern to historians and collectors. Like that of Adams, Jefferson, and Washington, his name appears on most of the great historical documents associated with the founding of the American nation. Like them, he was not just a Signer (fig. 1). He was one of those, whose wisdom and constructive thinking contributed heavily toward the formulation and the adoption of the principles and policies that led to American independence, and the establishment of the institutions of the nation.

But while Franklin's writings have all these things in common with those of other great leaders of our country, there are others that are unique with him, things which make his writing of special interest, if not *sui generis*. His own comments on the art of writing in its different aspects are numerous and suggestive. Furthermore, the large *corpus* of his extant writings, both in manuscript and in print, affords ample opportunity for intensive study. We have not only thousands of specimens of his penmanship, and literary style, but also the unique advantage of his own analysis and interpretation of both.

It is natural, therefore, that the renewed interest in American history, and the great vogue of science in recent years, have resulted in a steadily increasing flow of articles, and books, including editions of selected letters, autobiographical and others, of Franklin's writings. At the same time, there has been a concerted effort on the part of institutions and libraries, especially interested in Franklin, to locate and bring together the originals of his writings, and make them available for scholarship. In a measure, this has been unusually successful. On the other hand, it is far from complete. Much Frankliniana is still in private hands, fugitive, or, as in the case of the papers left with Galloway, probably hopelessly lost. By degrees, however, those in existence are being identified and recovered. Illustrations of this are plentiful, even if our own Library alone is considered.

A little over a decade ago, the large collection of Franklin Papers which had come to the Society a century before through the generosity of the family of an early member, George Fox, was augmented by the purchase of another important collection of Frankliniana from the Bache family. These, with many Franklin memorabilia in the possession of the Society from earlier days, and numerous Franklin manuscripts and imprints, acquired in the course of years, definitely established the Society's Library as an outstanding custodian of Franklin-iana. In response to this, Franklin's writings have been given a definite priority in recent years in the Library's program. An active policy was inaugurated, not only for the acquisition of new Franklin materials as they became available, but also for making the Society's holdings known and available to scholars. The results have been more than gratifying. A half-dozen special collections, more or less units in themselves, like the Franklin-Jackson correspondence; letters of Franklin and his favorite sister, Jane Mecom; his correspondence with Catharine Ray Greene, with William Strahan, and others have been added. Some of these have been edited and published in the Society's *Memoirs* while others, like the extensive collections of the papers of Benjamin Vaughan, Franklin's close friend and early editor of his writings, are awaiting editing and publishing. Scarcely a month passes without some important addition to our Frankliniana. Whether in small groups or in individual pieces, the more important

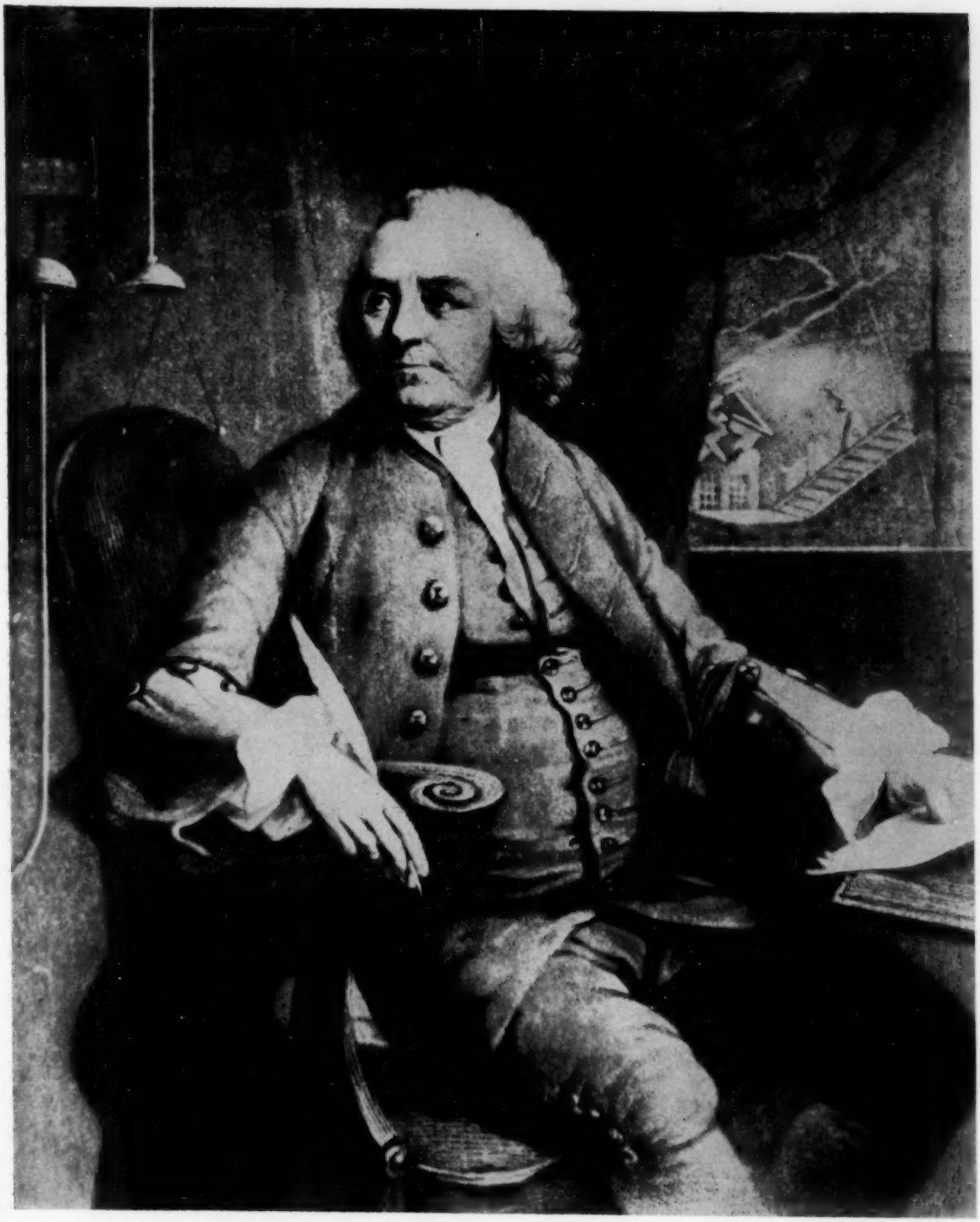


FIG. 1. Franklin in 1762, at the age of fifty-six, by Mason Chamberlin, a charter member of the Royal Academy. The portrait is regarded as "one of the best ever taken of Franklin." This engraving is from the mezzotint by C. Turner, F.R.A. The hand, quill, and manuscript of the portrait suggest the author and writer, while the scientific instruments, and the electrical storm in the background reflect the scientist honored nine years before by the Royal Society's award of the Copley Gold Medal.

FIG. 2. The Nation's first great Civic Center. From left to right are: Congress Hall; Independence Hall; Philosophical Hall; The Philadelphia Library Company; and Carpenters' Hall. *Columbian Magazine* (1790).

of these are reported in the *Year Book* and critically reviewed in the *Library Bulletin*.

During the last twelve months, for example, we have located and acquired originals, or copies in the form of photostats or microfilms, of many new items from England, France, and Italy; seventeen letters, nine of which were unknown heretofore, of Franklin's correspondence with his friends in Scotland. Quite recently, Mr. P. W. van der Pas of Pasadena, California, brought to our attention, several exciting discoveries in the archives of Breda and Vienna, first, a volume of correspondence of Franklin's friend, Dr. Ingenhousz, with drafts of numerous letters to Franklin; second, a memorandum for the Empress Maria Theresa of 1777, by Franklin, on American conditions; and third, the long lost Latin translation of *Experiments and Observations on Electricity*. Although mentioned by Franklin in the *Autobiography*, it had disappeared completely and was generally referred to as the "Ghost Edition." [2] Through the courteous cooperation of the custodians of the archives at Vienna and Breda microfilms of the originals have been secured.

Early this year, we were fortunate in acquiring a charming letter by Franklin to Madame Brillon in answer to one sent him by the entire Brillon family then on vacation in Nice. The Brillon letter has been in our collection for many years, but Franklin's reply, which was known to have been written, was thought lost. In Franklin's best vein, it is a superb illustration of his capacity to adapt his style to the occasion and the subject matter.

These and similar activity in other quarters represent a phase of what scholars regard as a sort of Franklin renaissance in connection with which a strong demand for a new and critical edition of Franklin's writings is being urged. This, and other proposals, are subjects of special study by a committee on the Society's plans for the celebration of the two hundred and fiftieth anniversary of his birth.

FIG. 3. The American Philosophical Society's proposed Library facing Independence Square, this elevation corresponding to that of the Philadelphia Library Company's building (1790–1884). Sydney E. Martin, F.A.I.A., Architect; Schell Lewis, del.

Meanwhile the Society in Council and Executive Session has already decided on a very practical and significant tribute to the Founder by a unanimous vote [3] to erect a new library building similar in design to the old Library Company founded in 1731 by Franklin. In accordance with a projected agreement with the Department of the Interior and

[2] For a brief discussion of this, see: Cohen, I. Bernard, *Benjamin Franklin's experiments*, Cambridge, Harvard Univ. Press, 1941.

[3] Minutes of the Council and the Executive Session of the Society at its Annual Meeting on April 24–27, 1952.

FIG. 4. South elevation of the new Library, the recessed entrance, columns, and general treatment bringing it into harmony with the Old Custom House and the other historic buildings in this area of the Independence National Historical Park. Sydney E. Martin, F.A.I.A., Architect; Schell Lewis, del.

the National Park Service, now awaiting Congressional approval, it is to occupy, approximately, the site of the old library built in 1790 by the nation's oldest subscription library. A very fine old Georgian building,[4] it was situated almost directly across the street from Philosophical Hall, forming an attractive architectural link between the Independence Hall group of buildings and Carpenters' Hall (fig. 2). In order to recapture the simplicity and charm of this part of old Philadelphia, the elevation of the Library on the Fifth Street (fig. 3) side is planned to conform with the original building, while the south elevation, on Library Street (fig. 4), is to be integrated with the old Custom House, Carpenters' Hall, and other historic survivals in this part of the Independence National Historical Park (fig. 5). The interior, apart from the historic reading room which will repeat the main features of the old Library, is to be thoroughly up-to-date, fire and dust proof, and air conditioned, with special research facilities to emphasize Franklin's intuitive respect for the dynamic force of *ideas* and the records of civilizations preserved in libraries and archives.

In view of the great State and Federal redevelop-

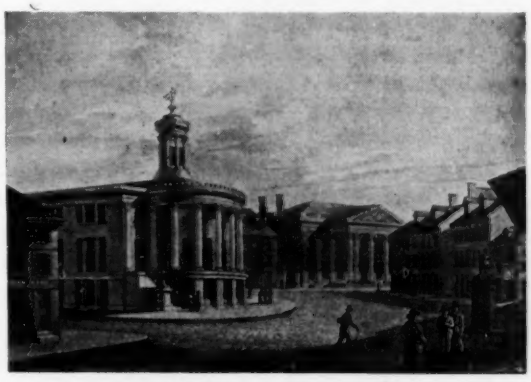


FIG. 5. The Merchants' Exchange and the Girard Bank, which with the Old Custom House (Fig. 5a) constitute a remarkable group of buildings of the Greek revival in old Philadelphia which are being preserved.

[4] See the scholarly study by Charles E. Peterson in *Proc. Amer. Philos. Soc.* **95** (3) : 266–285, 1951.

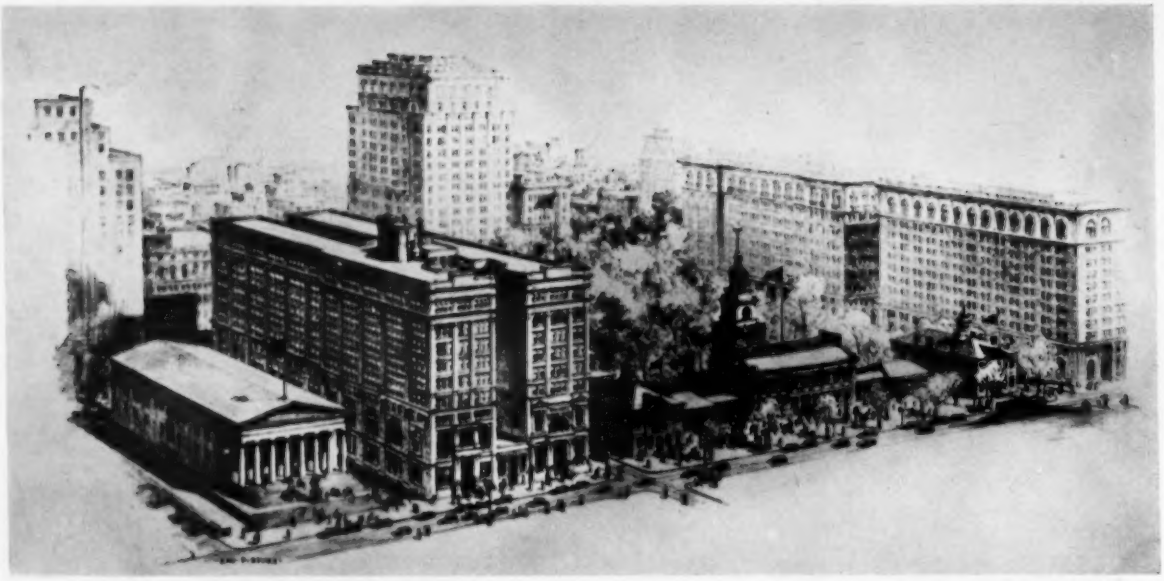


FIG. 5*a*. Independence Square surrounded on the east, west, and south by modern skyscrapers. The extension of the Drexel Building (left foreground) called for the demolition, in 1884, of the Library Company Building. Plans of the National Park Service now involve the demolition of the Drexel Building in its turn, making available the old site for Library Hall of the American Philosophical Society. (*Cf.* Bill No. HR 6544 passed by Congress, and signed by the President since this article went to press.)

ment and conservation projects now in progress in historic Philadelphia, this modified reconstruction of Franklin's old library is of much more than usual significance. During the stirring times of the Continental Congress and the Constitutional Convention, the old Library, then in Carpenters' Hall, extended its privilege to its members. With the completion of the new building in 1790, the Library became an integral part of the culture and political life of the National Capital until its removal to the banks of the Potomac in 1800. Today imposing skyscrapers may look down on the scene from the west and south on these unobtrusive, but charming buildings associated with the great events of the country's early history, but as Carl Van Doren has said, they ". . . cannot overshadow their plain honorable dignity" (fig. 5*a*). No more beautiful, or useful tribute could be offered by the American Philosophical Society to commemorate the 250th anniversary of the birth of Benjamin Franklin, its Founder, than restoring to Philadelphia and the nation this unique heritage of the past.

## II

## FRANKLIN'S PROSE

Although Franklin's extraordinarily clear and effective prose style has attracted the attention of his biographers and students of American literature, a brief reference to the wide recognition, by writers of distinction, of the superior quality of his literary style will be helpful in arriving at an appraisal of his contribution to the Art of Writing in general. In a letter to Franklin from Edinburgh in May, 1762, David Hume, himself one of the great stylists of the period, wrote:

> I am very sorry, that you intend soon to leave our Hemisphere. America has sent us many good things, Gold, Silver, Sugar, Tobacco, Indigo &c: But you are the first Philosopher, and indeed the first Great Man of Letters for whom we are beholden to her.

Elaborating on this, Moses Coit Tyler remarked:

> Thus before the close of its colonial epoch, America had produced one man of science and of letters who had reached cosmopolitan fame.[6]

Equally pertinent is Sir Humphrey Davy's suggestion to his students of agricultural chemistry, cited by I. Bernard Cohen, that they read Franklin's book on electricity, since "the style and manner of his publication on electricity are almost as

[5] Amer. Philos. Soc., *Franklin Papers*, **1**: 68.

[6] Tyler, Moses Coit, *History of American literature, 1607–1765*, 480, reissue, Ithaca, Cornell Univ. Press, 1949.

worthy of admiration as the doctrine it contains. . . . Science appears in his language in a dress wonderfully decorous, the best adapted to display her native loveliness."

Many illustrations from Franklin's own writings of his felicitous literary style could be cited, as for example his letter in the archives of the Royal Society, acknowledging the award of the Copley Gold Medal:

> Philad$^{a}$. May 29, 1754.
>
> Gentlemen,
>
> The very great Honour you have done me, in adjudging me your Medal for 1753 demands my grateful Acknowledgements, which I beg you would accept as the only Return at present in my Power.
>
> I know not whether any of your learned Body have attain'd the ancient boasted Art of *multiplying* Gold; but you have certainly found the Art of making it infinitely *more valuable*.
>
> You may easily bestow your Favours on Persons of more Merit; but on none who can have a higher Sense of the Honour, or a more perfect Respect for your Society and Esteem of its excellent Institution, than
>
> Gentlemen,
>
> Your most obliged
> & most obed$^{t}$. Servant,
> B. Franklin.
>
> Presid. & Council of
> the Royal Society.

That Franklin was himself conscious of the importance of good writing appears again and again in his own works, but is nowhere so realistically expressed as in *Poor Richard* of 1738:

> If you would not be forgotten as soon as you are dead and rotten, either write Things worth reading or do Things worth the writing.

Or, his own confession:

> Prose Writing has been of great Use to me in my Life, and has been a principal cause of my Advancement.

From the *Autobiography* and other sources we learn how, by dint of rigorous self-discipline, concentrated study and practice, he taught himself to write that remarkably strong, clear, and readable prose so subtlely adapted to the subject matter and the objectives he had in mind. For with Franklin, writing was always a means to an end, and not an end in itself.

That Franklin was responsible for what might well be called an early American best-seller in a field which later brought fortunes to the Spencers, Duntons, Scribners, and their associates, has been mentioned above.[7] In the research for this study, *The American Instructor: or, Young Man's Best Companion,* has been definitely identified as a rare Franklin publication with ample internal evidence, not only of its having been in part written by him, but of its character as a work of real historic import. It is, therefore, very remarkable that so little has been written on Franklin's own writing, and relatively nothing on his contribution to a subject that is of perennial concern to successive groups of young Americans as they begin their study of the Three R's.

## III

## THE PEN, THE PRESS, AND THE PRINTED PAGE

While there is considerable literature on B. Franklin, Printer, there is very little on the interdependence of printing and writing in Franklin's thought and practice. Yet with him, the arts of writing, penmanship, printing, and publication were intimately related, not by chance, but consciously and with a consistent purpose. In a vigorous article protesting against the imposition of duties on foreign books, he wrote:

> Art has furnished us with the astounding Invention of Printing which supplies the use of Speech both to the Dead and to the Distant, defying the Difficulties of Time and Space, and assembling together the Information of every human Being. . . .

To him, writing and printing were instruments for the conveyance of ideas which he practised with assiduous care, profoundly influencing the writing and penmanship of Americans for an entire century. Every American school boy knows, or should know, Franklin's last will and testament, which opens with the words:

> I Benjamin Franklin of Philadelphia, Printer, late Minister Plenipotentiary from the United States of America to the Court of France . . . (fig. 6).

[7] These names are well known to all historians of Education through their Copy Books—A. R. Dunton's (New Orleans, 1843), Payson, Dunton, and Scribner (New York, 1855), and *The Spencerian system of practicing penmanship* (Buffalo, 1859), the last in a series of eight progressive copybooks illustrated the "Spencerian" elongated, heavily shaded, and flourished hand adopted by business schools and instructors in penmanship generally.

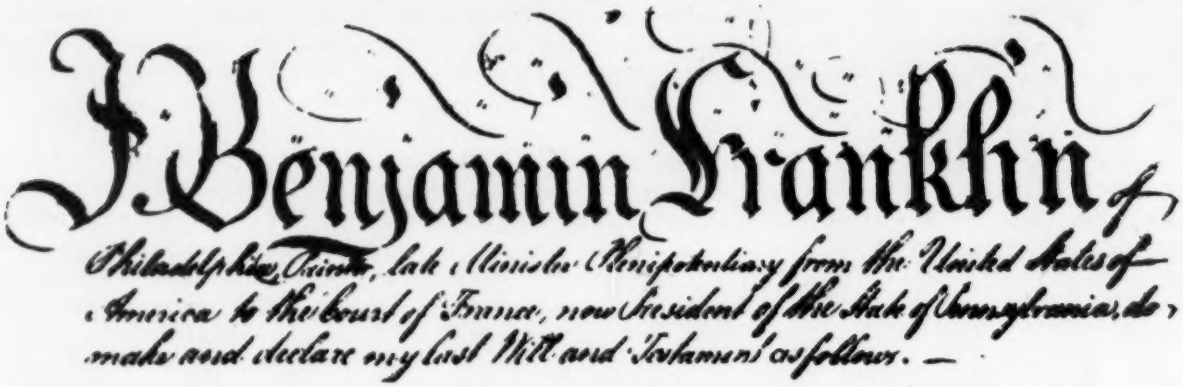

I Benjamin Franklin of
Philadelphia Printer late Minister Plenipotentiary from the United States of
America to the Court of France, now President of the State of Pennsylvania &c
make and declare my last Will and Testament as follows. —

FIG. 6. The opening paragraph of Farnklin's Will, emphasizing his life long loyalty to printing, and the use of his full name in the context of formal documents.

Even his famous epitaph, written by himself in 1728 at the age of twenty-two, and later re-written on different occasions with slight variations, is, as Dr. Rosenbach wrote, "in the parlance of his trade":

The Body of
B. Franklin,
Printer,
Like the Cover of an old Book,
Its Contents torn out,
And stript of its Lettering and Gilding,
Lies here, Food for Worms.
But the Work shall not be wholly lost:
For it will, as he believ'd appear once more,
In a new & more perfect Edition,
Corrected and amended
By the Author.[8]

The unity of the pen, the press, and the printed page was a cardinal tenet in his thinking and writing on the subject—a tenet clearly based on a sympathetic understanding of the needs of the reader, whom he never forgot.

While Franklin's native genius must always be a basic consideration in any account of his writing, his intimate and very practical association with the arts of writing and printing is of real significance. From early boyhood, he was consciously aware of the successive steps of formulating his ideas, putting them into writing, and then into print. By dint of almost constant association with manuscripts and printers' copy, he developed a keen appreciation of the advantages of legibility, punctuation, emphasis, paragraphing, purity of language, precision in the use of words, and literary style. He was intimately acquainted with the instruments of writing, for he was also a shopkeeper; his Shop and Account Books have many entries relating to quills, paper, regulations for its manufacture, ink and its proper ingredients. Moreover, being a very practical man, he applied his knowledge of these things to his own needs. He was always partial to good quills, good ink, and good paper. Evidences of a poor quill, bad ink or paper are rare.

At the same time, his role as the master printer and publisher of the colonies, necessitated the cultivation of a clear and forceful prose style. The story of how the self-taught young printer and tradesman, by dint of self-discipline and the study of classics, like Addison's *Spectator,* developed a style which in its simplicity and clarity gives him a place with the foremost writers of English prose, has been referred to above. In passing, however, it may be added that a thoughtful reading of the *Autobiography* and *Proposals Relating to the Education of Youth in Pensilvania* would be a salutory exercise for both the youth and their mentors of our time.

As with printing, so with writing and allied subjects, Franklin maintained a lively interest throughout his entire life. His ideas on spelling reform are well known not only through his letters to Mary Stevenson, but also through the abortive efforts by those less practically minded to use phonetic characters in their publications. Even during the busy years in Passy and afterwards, he found time amid the strenuous duties of his diplomatic mission to counsel his grandson, Benny Bache, on the importance of good writing; to con-

[8] Text of the Epitaph in the Mason Collection of Yale University. For facsimiles of the best extant originals of the Epitaph, see the scholarly study by L. H. Butterfield on "B. Franklin's Epitaph," *The New Colophon,* 3: 9–39, New York, 1950.

sider spelling reform with Noah Webster; to correspond on printers' type and its relation to writing with the Italian printer and typographer, Giambattista Bodoni; to assemble and bring to America the latest and best fonts of type from Europe; and to invent a set of codes for his diplomatic correspondence, some of which have long challenged the wits of amateurs and professionals. In a letter of 1787 to Bodoni, thanking him for his manual on printers' type, he drew attention to three things writing and printing had in common—first, legibility; second, pleasing appearance; and third, economy. Writing to Noah Webster, on December 26, 1789, acknowledging the receipt of the *Dissertations on the English Language,* which he characterized as "an excellent Work . . . greatly useful in turning the Thoughts of our Countrymen to correct Writing," he humorously describes certain current trends in writing and printing, as "Improvements backwards." Among them he lists the abandonment of the initial capital letter in substantives, of italics for emphasis, and the long *s,* which, like "paring all Men's Noses might smooth and level their Faces, but would render their Physiognomies less distinguishable." The conceit that "grey Printing"—grey ink and grey paper—is more beautiful than black, he satirized as untrue and hard on "Old Eyes."

## IV

## PIONEER IN THE ART OF WRITING. *THE AMERICAN INSTRUCTOR*

In view of this wide and continued interest in the art of writing and printing, and his pioneering ventures in general, it is very natural that Franklin should have been interested in the popular manuals on the subject. Among the rare books in our Library is a small duodecimo volume entitled *The American Instructor: or, Young Man's Best Companion,* by George Fisher, printed in 1748, by Franklin and Hall, Philadelphia (fig. 7). It is the ninth edition "revised and corrected" of one of those early eighteenth-century manuals on Arithmetic, Reading, Writing, and other useful matters, which had already attained considerable vogue in England before its publication in America. In the colonies it soon attained a like popularity; new editions and printings followed quickly, according to Louis C. Karpinski, one in Boston, 1749, another in Philadelphia in 1753; and sixteen in all before 1800. Hildeburn mentions an entry in Haven's list of an edition in 1730, but adds: "Title probably incorrect," a comment our search also confirms as to the date.

Although not attributed to Franklin by bibliographers, the first American edition was not only published by Franklin and Hall, but it was edited and largely rewritten by Franklin. What is more, he himself had initiated its publication before he withdrew from active participation in printing in 1748 and set up the partnership with Hall. In a letter to Franklin of September 7, 1747, James Parker, his partner in the printing business in New York, wrote:

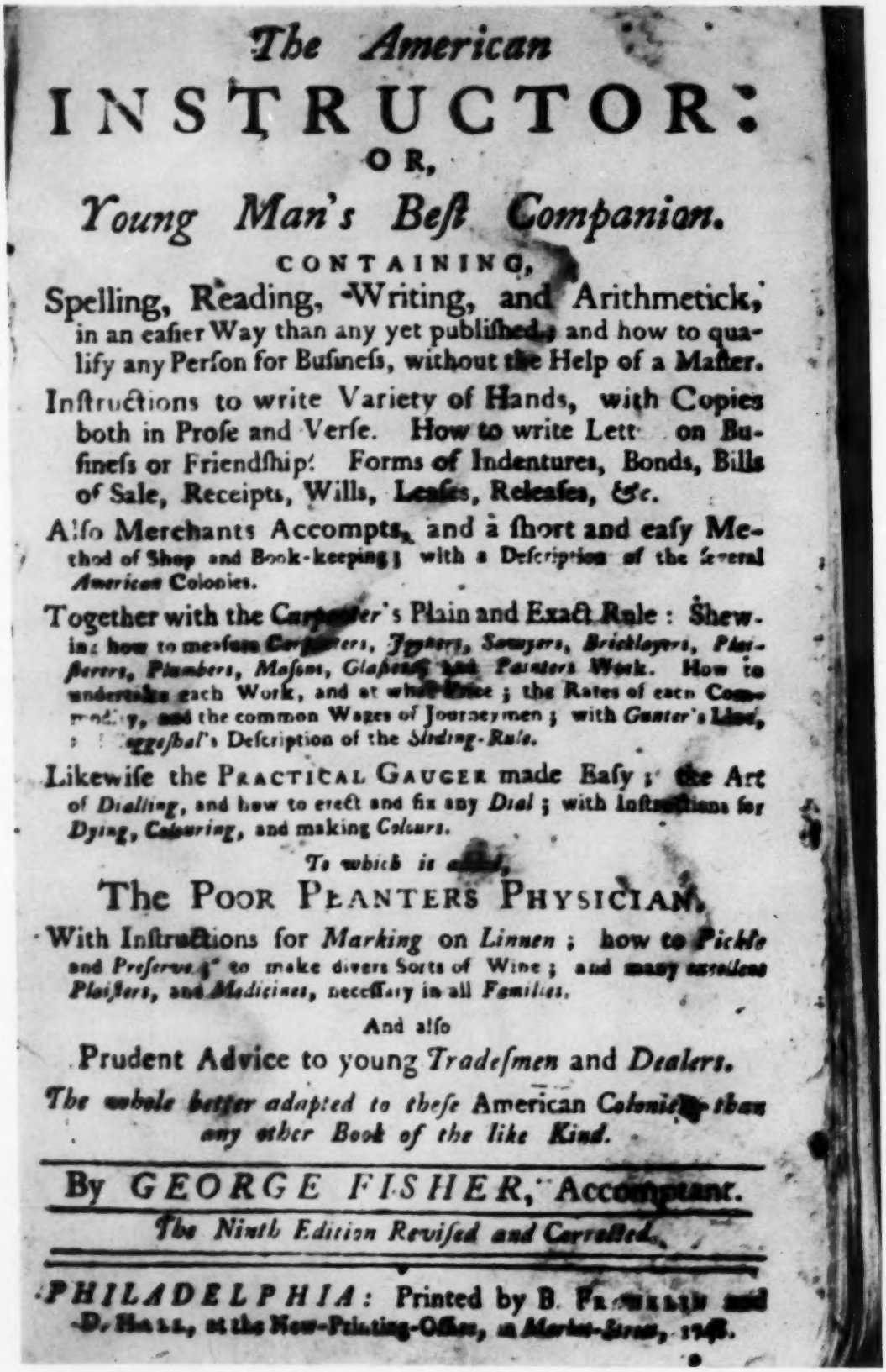
> I received ye Pocket Companion safe, 'tis well enough:-may I ask if the Young Man's Companion be almost done?

From this, it is clear that Parker, who was in close communication with Franklin, knew of the plans for the publication of the manual in the early autumn of 1747. Nearly two years before, in a letter of April 14, 1745, to his printer-friend, William Strahan of London, Franklin ordered "3 Doz. Mather's *Young Man's Companion,*" and "2 Doz Fisher's *Ditto,*" along with a considerable number of grammars, dictionaries and vocabularies. Elsewhere are entries for Edward Cocker's *Arithmetick* which has been referred to as the original of them all. Franklin's personal interest in it may be judged by the following passage from the *Autobiography:*

> And now it was that, being on some occasions made asham'd of my ignorance in figures, which I had twice failed in learning when at school, I took Cocker's book of Arithmetick, and went through the whole by myself with great ease.

The interdependence of the Fisher, and the Mather *Instructor,* and their relationship to Cocker's *Arithmetick,* is as complicated as it is intriguing. Personally, I gave up all efforts to solve the riddle when my attention was drawn to the 52nd edition of Cocker's *Arithmetick* "carefully corrected and amended, by George Fisher, accomptant," published in the same year as Franklin's *American Instructor.*

As for the English author, the "elusive George Fisher" of the *Young Man's Companion,* Evans and the Library of Congress, following the British Museum Catalogue, suggest that it is a *nom de plume* for a Mrs. Slack. But according to Louis C. Karpinski (*Scripta Mathematica,* 3: 337–339, October, 1935), Mrs. Slack is quite as "elusive." In its *Bibliographical History,* 1724–1800 (1936) the House of Longman repeats the nom de plume



*The American*

# INSTRUCTOR:

OR,

## *Young Man's Beſt Companion.*

CONTAINING,

Spelling, Reading, Writing, and Arithmetick, in an eaſier Way than any yet publiſhed; and how to qualify any Perſon for Buſineſs, without the Help of a Maſter.

Inſtructions to write Variety of Hands, with Copies both in Proſe and Verſe. How to write Lett on Buſineſs or Friendſhip. Forms of Indentures, Bonds, Bills of Sale, Receipts, Wills, Leaſes, Releaſes, *&c.*

Alſo Merchants Accompts, and a ſhort and eaſy Method of Shop and Book-keeping; with a Deſcription of the ſeveral *American* Colonies.

Together with the Carpenter's Plain and Exact Rule: Shewing how to meaſure Carpenters, Joyners, Sawyers, Bricklayers, Plaiſterers, Plumbers, Maſons, Glaſiers and Painters Work. How to undertake each Work, and at what Price; the Rates of each Commodity, and the common Wages of Journeymen; with *Gunter's* Line, and *Eggeſhal's* Deſcription of the *Sliding-Rule.*

Likewiſe the PRACTICAL GAUGER made Eaſy; the Art of *Dialling*, and how to erect and fix any *Dial*; with Inſtructions for *Dying*, *Colouring*, and making *Colours.*

*To which is added,*

## The POOR PLANTERS PHYSICIAN,

With Inſtructions for *Marking* on *Linnen*; how to *Pickle* and *Preſerve* to make divers Sorts of Wine; and many excellent *Plaiſters*, and *Medicines*, neceſſary in all *Families.*

And alſo

Prudent Advice to young *Tradeſmen* and *Dealers.*

*The whole better adapted to theſe* American *Colonies than any other Book of the like Kind.*

By *GEORGE FISHER*, Accomptant.

*The Ninth Edition Reviſed and Corrected.*

*PHILADELPHIA:* Printed by B. Franklin and D. Hall, at the New-Printing-Office, in *Market-Street*, 1748.

FIG. 7. Title page of *The American Instructor.* Original 3¼″ × 6⅜″.

for Mrs. Slack, adding that this book is based upon, and taken largely verbatim from W. Mather's *The Young Man's Companion.*

Happily, the identification of Fisher and the interrelationship of the different manuals are not of a special concern to this study. In his standard *Bibliography on Mathematical Works Printed in America through 1850* (1940) and the special study on the "elusive George Fisher . . ." Dr. Karpinski clears up some of the problems, but rather accepts the interrelationship as an unsolved mystery. What we do know definitely is that manuals of this kind were very much in demand both here and in England, the colonists in this respect, as in so many others, still depending on publications from the mother country. On the other hand, the appearance of "American" in the title suggests a departure indicative of a new trend, quite apart from its contribution towards the sale of the book. Careful study of the content suggests a much broader import to this addition to the title. It properly directs attention to important new and American features in the volume. This doubtless also accounts, in no small degree, for the great popularity of the work in the colonies. "American interest in George Fisher," wrote Karpinski, "lies particularly, of course, in the fact that her '*Instructor*' compendium, first printed in America by our Benjamin Franklin and David Hall, became the most popular American work on arithmetic up to the end of the Revolution. . . ." But it was obviously not the arithmetical, but the other parts of the Manual, that gave it its unique, and distinctly American character. And since these were contributed by Franklin himself, the book takes its place as an early and significant example of his *Americanism.*

To a man of Franklin's initiative and business acumen, the publication of a manual like the *Young Man's Companion* must have looked like a simple and profitable venture, quite apart from its contribution toward the education of Americans through their own efforts. At any rate, he decided to publish Fisher's manual. Why he chose to publish Fisher's book instead of Mather's does not concern us here, neither do the arrangements, if any, he may have made with the author and the English publisher. "Literary piracy" was, of course, quite common in the eighteenth century. Indeed, well down into the last century some of the most popular books, like *David Copperfield* in this country, and *Uncle Tom's Cabin,* and *The Wide, Wide World,* in England, were published without regard for the rights of the authors or publishers. The king's license in Mather's *Young Man's Companion* reads in part:

> To William Johnston, his Executors, Administrators, and Assigns, our Royal licence for the Sole Printing and Vending of the said Work for the Term of Fourteen Years . . . ; strictly forbidding all our Subjects, within our Kingdoms and Dominions, To reprint and abridge the same either in the like, or any other Size or Manner whatsoever, or to *import, buy, vend,* utter or *distribute* any Copies thereof, reprinted beyond the Seas, during the aforesaid Term of Fourteen years, without the Consent of the Said *William Johnston,* his Heirs. . . .

Signed B U T E, at his Majesty's Command, on the first day of August, 1761, and obviously a publisher's or bookseller's copyright, it is an early example of George III's restrictive measures with which Franklin was to be in conflict for so many years. That Franklin was fully alive to license and copyright laws is shown in a letter to William Strahan following their reconciliation after the peace. Writing from Passy in August of 1784, he said:

> By the way, the rapid Growth and extension of the English Language in America, must become greatly Advantageous to the booksellers, and holders of Copy-Rights in England. A vast audience is assembling there for English Authors, ancient, present, and future, our People doubling every twenty Years; and this will demand large and of course profitable Impressions of your most valuable Books. I would therefore, if I possessed such rights, entail them, if such a thing be practicable, upon my Posterity; for their Worth will be continually augmenting. This may look a little like Advice, and yet I have drank no *Madeira* these Ten Months.[8a]

Analysis of the content of *The American Instructor,* as noted above, has led to several surprising disclosures. Among these is the confirmation of the recent suggestion [9] that Franklin wrote the preface; that he supplied the handwriting specimens, or models. Even more startling is the un-

[8a] A. H. Smyth, *Writings of Benjamin Franklin,* **9**: 263, N. Y., Macmillan, 1907.

[9] In his excellent little book on American Copybooks, (Phila., Fell, 1951) Stanley Morison draws attention to this, but rather weakens his case by departing from the Franklin characteristics in his quotation from the original, and transposing the keyword "American" to the second part of the title; e.g: *The Instructor, or American Young Man's Best Companion.*

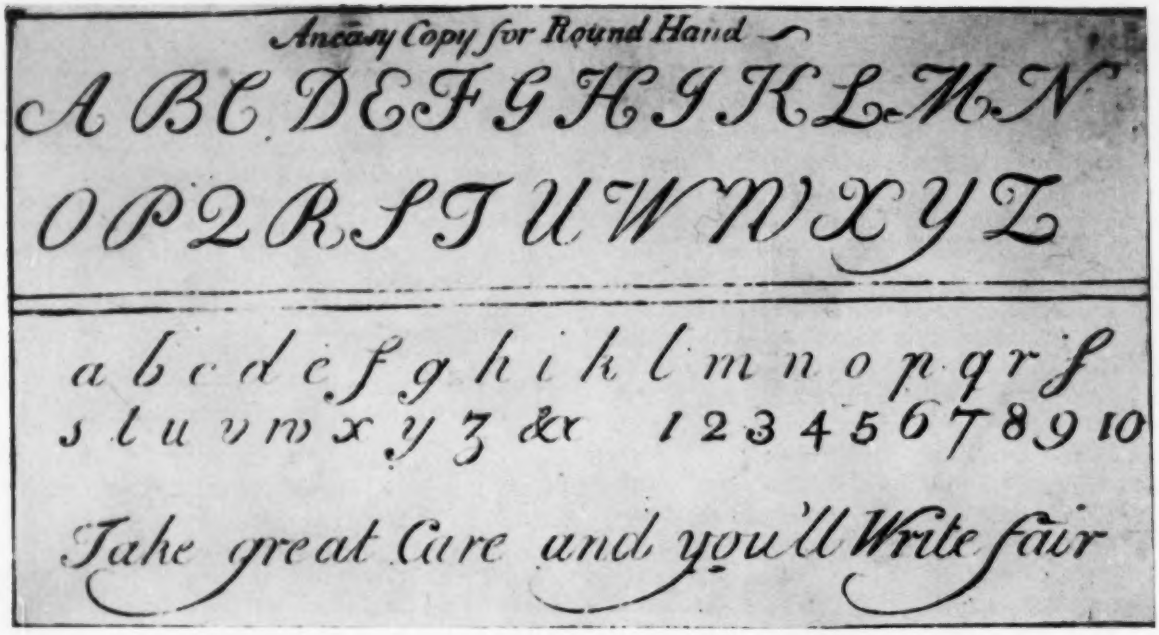

Ancany Copy for Round Hand
A B C D E F G H I K L M N
O P 2 R S T U W W X Y Z
a b c d e f g h i k l m n o p q r s
s t u v w x y z & 1 2 3 4 5 6 7 8 9 10
Take great Care and you'll Write fair

FIG. 8. Slightly enlarged copy of the round hand model supplied by Franklin in *The American Instructor.*

suspected appearance of *The Advice to a Young Tradesman, written by an Old One,* the first publication of which has consistently eluded bibliographers and historians; and possibly "An Explanation of Mr. J. B.'s Twelve Ciphers." Evidence of these points, with the possible exception of the last, is as unmistakable as it is intriguing. For although Franklin's *name* does not appear anywhere in the volume, except as the partner of David Hall, his *hand* is conspicuously present throughout.

The brief and thoroughly Franklinesque preface, concludes as follows:

> In the British Edition of this Book, there were many Things of little or no Use in these Parts of the World: In this Edition those Things are omitted, and in their Room many other Matters inserted, more immediately useful to us Americans. And many Errors in the Arithmetical Part are here carefully corrected.
>
> **Vale & Fruere**

Apart from the Franklinian preface, and certain minor matters, the models, or specimens, of handwriting command attention. Not only are they supplied by Franklin, but, as can be seen in this facsimile (fig. 8), the third specimen is clearly his own familiar round hand. Equally surprising is the presence at the end of the volume of the *Advice to a Young Tradesman, written by an Old One,* in which, beginning with the characteristic sentence, "REMEMBER that Time is Money, . . ." he develops his philosophy of thrift in the use of time, money, and credit. One of the best known of Franklin's short pieces, and republished again and again, its first appearance in print has baffled Franklin scholars. Paul Leicester Ford gives 1748 as the date of writing, but tentatively suggests 1800 for its publication. The failure to discover its publication in *The Instructor* is doubtless explained by the fact that the volume was not known as a Franklin item, save incidentally as a Franklin-Hall imprint. Evans, in his entry of *The Instructor* by Gaine, 1760, and in different subsequent editions, refers to "Prudent Advice" as part of the content, but he was manifestly not aware of Franklin's authorship. Ford lists four separate printings before 1824, one in Philadelphia, two in London, and one in Dublin. The undated Philadelphia printing by D. Humphreys, for which the British Museum Catalogue conjectures the year 1750 to be the probable time of publication, was at one time thought to be the earliest. But in the *Bibliographer* of March, 1902, Worthington C. Ford shows that it could not have been done before 1784. He gives priority to the Boston imprint by Benjamin Mecom, Franklin's nephew, which, he writes "must have appeared between 1758 and 1762," and therefore "stands as the earliest known edition of this essay, and so far antedates other

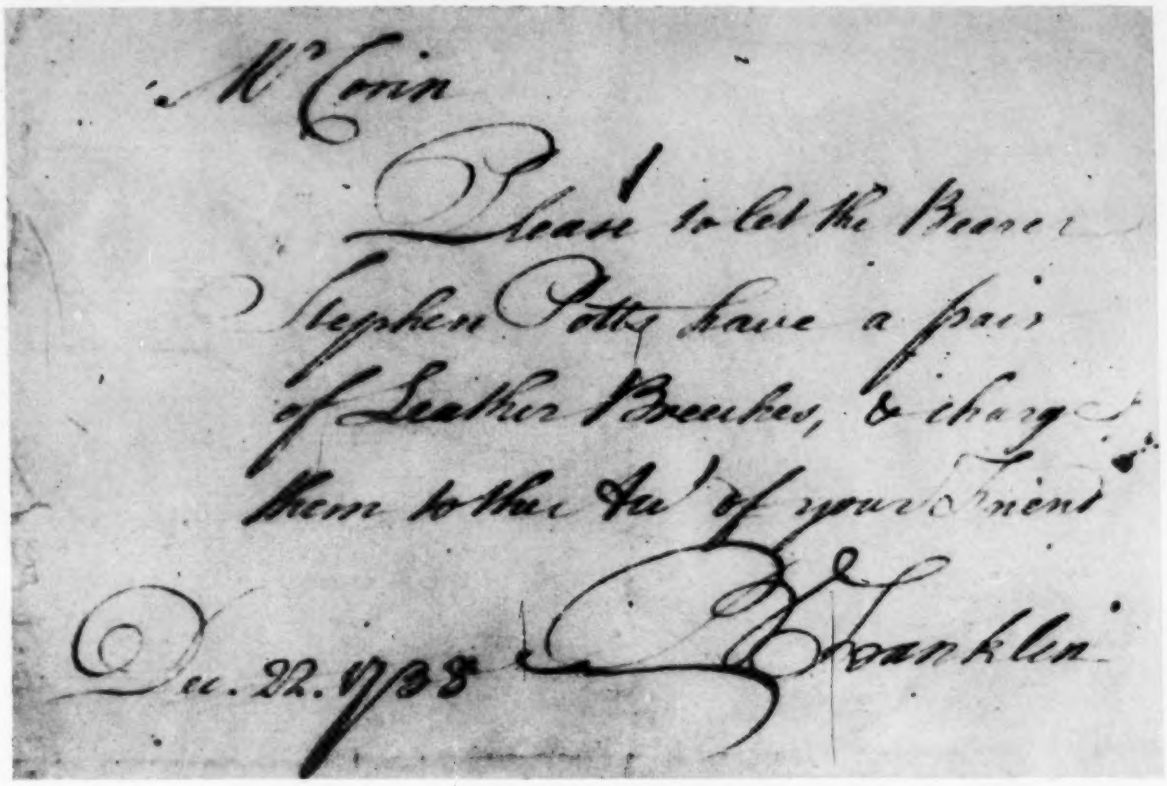


FIG. 9. A good specimen of Franklin's own round hand, ten years before he published his more conservative model in *The American Instructor* (fig. 8).

existing issues as to constitute a true rarity. . . ." Apart from separate publications, another early printing is found in *The Repository* for 1788, where it evidently appeared through the activity of Benjamin Vaughan, the Editor referring to it as an original piece. It is obvious, therefore, that the appearance of the "Advice to a Young Tradesman . . ." in 1748 in *The American Instructor* must be accepted as the first printing yet discovered of Franklin's well known essay.

But the little volume has still another surprise—one very closely linked with Franklin's concern with handwriting and penmanship. On page 377, next to the last page, is the following:

An Explanation of Mr. J. B.'s Twelve Ciphers. *By practising which, the young Writer may more speedily acquire a perfect Idea of the Proportions of the Roundhand Letters, and their Relations to each other, than by any other Method yet known.*

The author's special concern for the "Roundhand," and his extraordinary attention to the details of handwriting are so thoroughly in accord with Franklin's interests and habits that these somewhat cryptic instructions may afford still further evidence of his authorship.

All in all, Franklin's forbearance in revealing his share in the publication of *The American Instructor* is thoroughly in character. Even without the intriguing presence of one or other of Franklin's

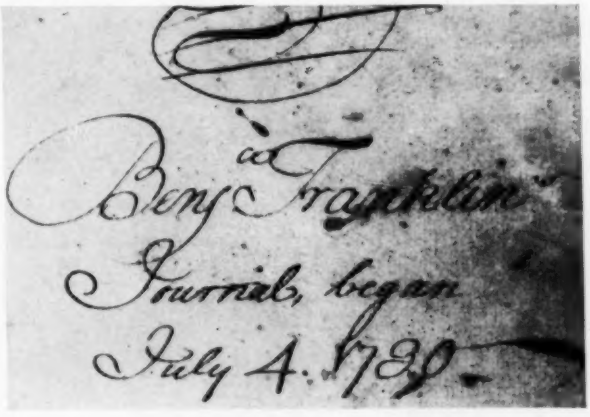
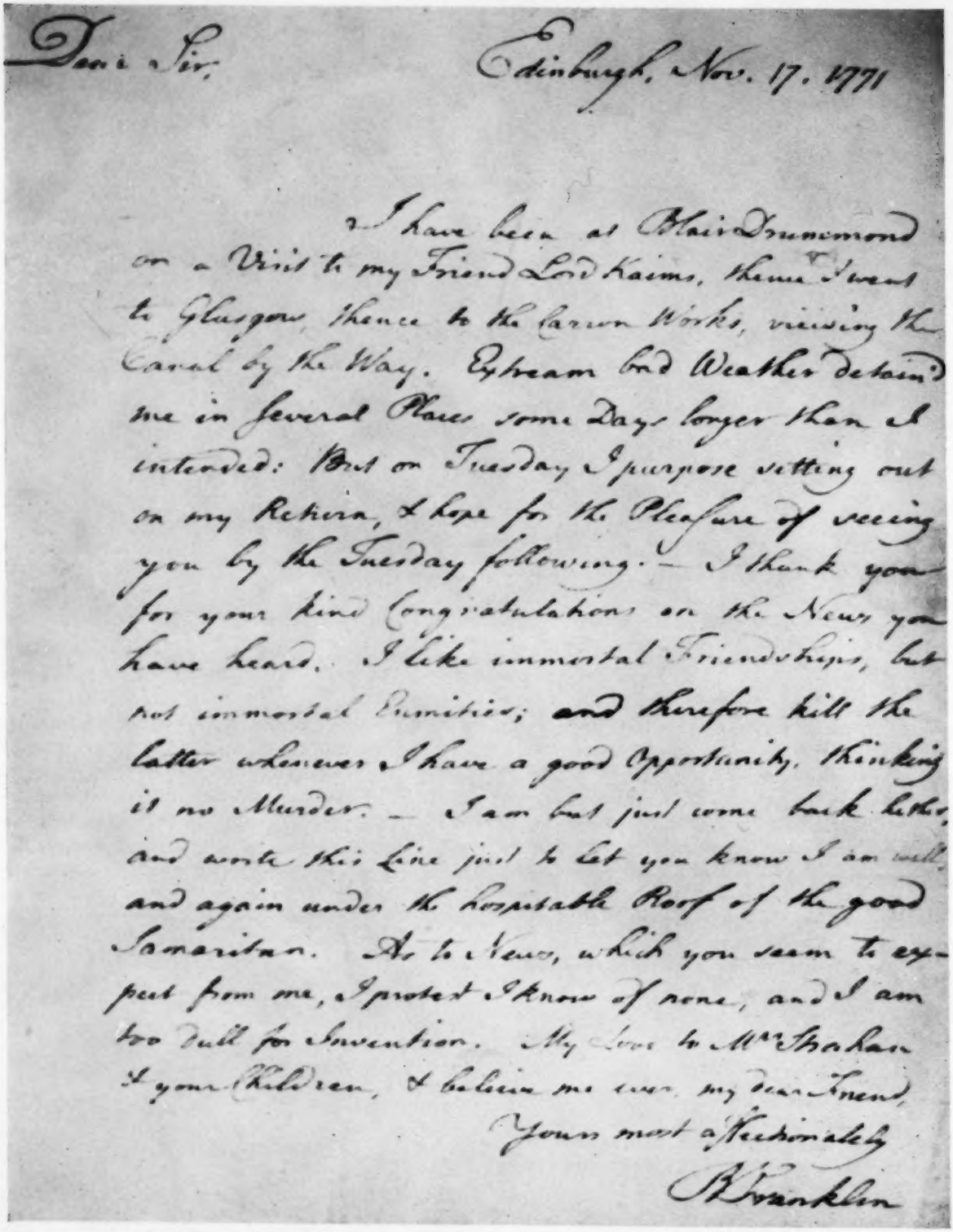


FIG. 10. Franklin's numerals.



Dear Sir, Edinburgh, Nov. 17. 1771

I have been at Blair Drummond on a Visit to my Friend Lord Kaims, thence I went to Glasgow, thence to the Carron Works, viewing the Canal by the Way. Extream bad Weather detain'd me in several Places some Days longer than I intended: But on Tuesday I purpose setting out on my Return, & hope for the Pleasure of seeing you by the Tuesday following. — I thank you for your kind Congratulations on the News you have heard. I like immortal Friendships, but not immortal Enmities; and therefore kill the latter whenever I have a good Opportunity, thinking it no Murder. — I am but just come back hither, and write this Line just to let you know I am well, and again under the hospitable Roof of the good Samaritan. As to News, which you seem to expect from me, I protest I know of none, and I am too dull for Invention. My Love to Mrs Strahan & your Children, & believe me ever, my dear Friend,

Yours most affectionately

B Franklin

FIG. 11. Letter to William Strahan illustrating the use of capitals, dash, and signature without the parafe for lack of space.

*nom de plumes,* we have here a striking example, in middle life, of his fondness for that anonymity so succesfully used in the surreptitious publication in the Stamp Act controversy, and later, in his political propaganda on the continent.

## V

## FRANKLIN'S HANDWRITING MODELS OR SPECIMENS

From the standpoint of his handwriting, Franklin's contribution to the American edition of the *Instructor,* which is of especial importance to this part of the present study, are the specimens, or models, of the letters of the alphabet. Four in all, they are described as "Copies of the most usual, fashionable, and commendable Hands for Business." For as Morison [10] says:

> The Round Hand is an individual creation by Franklin, owing little to his professional predecessors or contemporaries

(fig. 9). It is, moreover, not just a specimen for the manual. On the basis of a comparison with numerous examples of his writing of the period, it is, as noted above, to all intents and purposes Franklin's own familiar hand. Both show a decided tendency to loop the down strokes of *B, F, P, R,* and *S,* and the small *f* and *s* when they descend below the line. Another feature is the weighting of the down strokes of the lower case letters *b, d, h, k, l, r,* and *t.* These in particular show the simple character of all Franklin's letters. They are made with the least possible effort. All unnecessary strokes are eliminated, as became the writing dedicated to the phenomenal rise of commerce and finance in the eighteenth century. There is no waste of effort, space, or time. It reminds one of the admonition in his *Proposals relating to the Education of Youth in Pensilvania,* written within a year of the appearance of the *Instructor:*

> All should be taught to write a *fair* Hand, and swift, as that is useful to All.

Among the numerals, *4, 6, 7,* and *8* command attention. The heavy down stroke of the *4* and the *7,* the more erect stance of the former, and the combination of *1* and *7,* give them a conspicuous appearance among Franklin's numerals (fig. 10).

[10] *Op. cit,* 18.

## VI

## USE OF CAPITALS, DASH, AND PARAGRAPH

Very consistent also is Franklin's use of initial capitals for all substantives, a feature too often ignored by publishers of his writings. Most of his editors show a regrettable disregard for the original in this respect. I say "regrettable," because it was almost an unbroken rule with Franklin to begin his nouns with a capital. He regarded it not only as a means of emphasis, but also as an attractive feature in the general appearance of the paragraph and page (fig. 11). Perhaps it was this meaningful use of capitals that kept him from using the medium-sized letters (between upper and lower case), a habit that is so often the despair of conscientious editors of eighteenth-century texts.

Punctuation is reasonable and limited, rather than profuse, and used solely to bring out the meaning. Paragraphs also are not too frequent, and, of course, used to indicate the change to a distinctly new subject. On the other hand, Franklin's use of a *dash* in the text of his letters was a device of his own which has real significance for the text and content, and not, as has been suggested, a means of extending the line to secure a good right-hand margin. It marks the introduction of a new topic, or line of thought, and suggests a pause not sufficiently important enough to call for a paragraph. Besides, it saved space and paper, and gave variety to the page. "*A monotonous printed page,*" he once wrote, "*is like one of Whitefield's sermons delivered by a schoolboy.*"

## VII

## THE AUTOGRAPH OR SIGNATURE

Franklin's autograph is supposedly so well-known that detailed consideration would seem unnecessary. This is, however, very far from being

FIG. 12. An early example of Franklin's use of the parafe, Nov. 28, 1747.

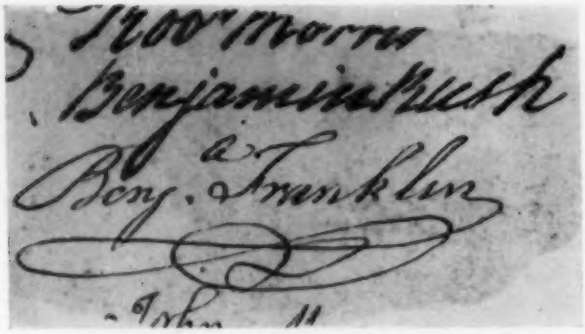


FIG. 13. Franklin's signature on the Declaration of Independence. After an engraving of 1823.

FIG. 14. Franklin's autograph as President and therefore without the parafe.

the case. More than any other part of his writing, the signature has given rise to misconceptions and enigmas that are difficult to explain. Even in informed circles, the signature with the ornate flourish, the *parafe* as the French call it (fig. 12), is attributed to his early years as an expression of youthful exuberance and copybook influence, abandoned later in life as unbecoming a man of Franklin's robust character. It seems very plausible, and as such has obtained rather general acceptance. In all probability the unequivocal support of the idea by Franklin's close friend, Dr. Benjamin Rush, partly accounts for its currency even today. In a letter to his son in Philadelphia on June 22, 1803, Rush wrote: [11]

> . . . I observe likewise you subscribe your name in a different hand from that in which your letter is written. Avoid this in future. It looks like affectation. Dr. Franklin avoided it in all his letters. "Ex simplicitate decus" should govern our most trifling compositions. Dr. Franklin when a young man was in the habit of writing his name with a flourish. An old man who saw it by accident cried out, "What fool's name is this?" Ever afterwards the Doctor wrote his name in a plain and simple manner.

How Dr. Rush could make so erroneous a statement is hard to understand. For it was during the second period of his life, and not during the first, that Franklin added the flourish to his signature. The earliest example in the Society's collection of Frankliniana that has come to my attention occurs in a letter of November 28, 1747. If Rush had recalled the signature immediately below his own on the Declaration of Independence (fig. 13), he would have modified his statement for 1776 at least. Among the many letters in our Franklin Collection of the later period there are very few signed in "a plain and simple manner." When the plain signature occurs, it is usually because there is no room at the bottom of the paper for the flourish, or the signature is followed immediately by another word, indicative of Franklin's official role in relation to the particular communication (fig. 14). I say "usually," because exceptions, though relatively few, do occur, as in the case of his letter of 1782 (fig. 15) to his grandson, Benny Bache, then at school in Geneva. The theory that the plain signature was not used in his private correspondence seems reasonable, but like the conventional view of the use of the flourish, it is also incorrect, for it appears regularly even in his letters to Deborah after 1764 (fig. 16).

Apart from the question of the presence or absence of the flourish, there are occasional departures from the usual "B. Franklin" in the signature. Foremost among these is "Benjamin

[11] *Letters of Benjamin Rush*, **2**: 869, ed. by L. H. Butterfield, *Mem. Amer. Philos. Soc.* **30**, 1951.

FIG. 15. Franklin to his grandson, 1782, the parafe being absent because of lack of space.

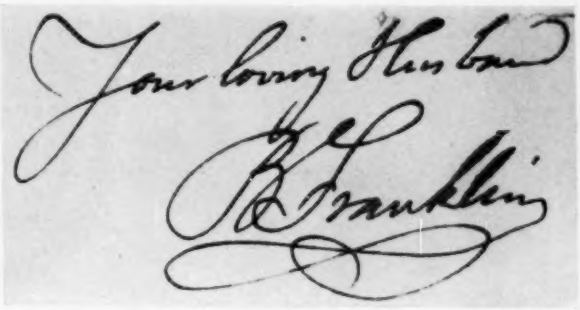


FIG. 16. Letter to Deborah, which, like nearly all letters after 1748 to other members of the family, has the ornate signature.

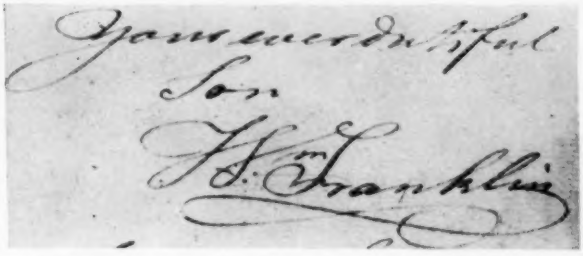


FIG. 17. Signature of William Franklin, Governor of New Jersey. The writing of both the son and the grandson, William Temple Franklin, have much in common with that of Franklin.

Franklin," which is used in his Wills and a few legal documents. There is the "Benj[a] Franklin," as in the Declaration; while "Benj" and "Benj[n]" also appear, especially in the Account Books. In later years, the period after the *B* is dropped and the liason between the Franklinesque initials *B* and *F* more clearly established. Continuity is broken after the down stroke of the *F* for the cross stroke which is always placed low, affording a swift transition in the next down stroke to the small *r* which, like the rest of Franklin's letters, is unusually simple and economical.

## VIII

## GENERAL CHARACTERISTICS

In general, Franklin wrote in a clear, cursory hand with a distinct rhythm. The letters are round and the essential strokes well marked; words are evenly and generously spaced along a straight base line from which there is very little deviation. As Franklin himself, wrote in his "Idea of an English School" addressed to Dr. Samuel Johnson:

> 'Tis the Writing-Master's Business to take Care that the Boys make fair Characters, and place them straight and even in the Lines.

Space between the lines, like that between the words, is also uniform. There is the printer's respect for generous margins coupled with the artist's instinct for the significance and appearance of the page as a whole.

That Franklin developed good penmanship early in life, is seen in *The Elegy* and in the Shop and Account Books. It is the style of penmanship to which the other male members of the Franklin clan were also partial, and one might venture the guess that it goes back to a common original even though the American edition of the "elusive" George Fisher's *Instructor* did not appear until 1748. Certainly Franklin's son and grandson, William Franklin (fig. 17) and William Temple Franklin, adopted it, as did so many others later, even down to the generation of Abraham Lincoln, who as Albert D. Osborn says in his recent article on "Forged Autographs": "Lincoln, of course,

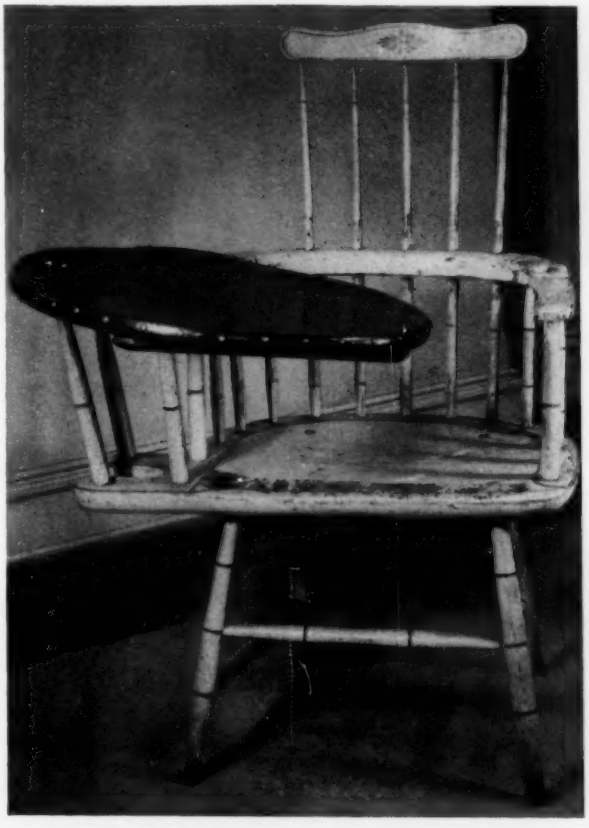


FIG. 18. Franklin's writing chair with ample armrest, like that of Jefferson's is suggestive of the writing habits of the owner. Courtesy of the University of Pennsylvania.

FIG. 19. Thomas Jefferson's chair with its very large armrest on which he drafted the Declaration of Independence, now in the Hall of the American Philosophical Society.

learned to write before 1850 and learned the old round hand." [12]

[12] Osborn, Albert D., Forged autographs, *Jour. Autograph Coll.* 4 (1) : 41–42, 1951.

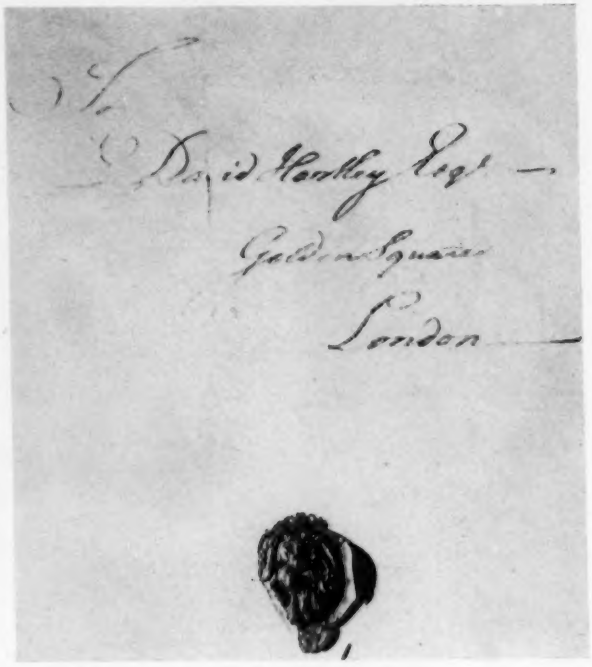



FIG. 21. This example of Franklin's address on his letters illustrates his respect for legibility, which was, of course, a matter of real concern to one who was for sixteen years Postmaster in Philadelphia, and Deputy Postmaster of the colonies from 1753 to 1774.

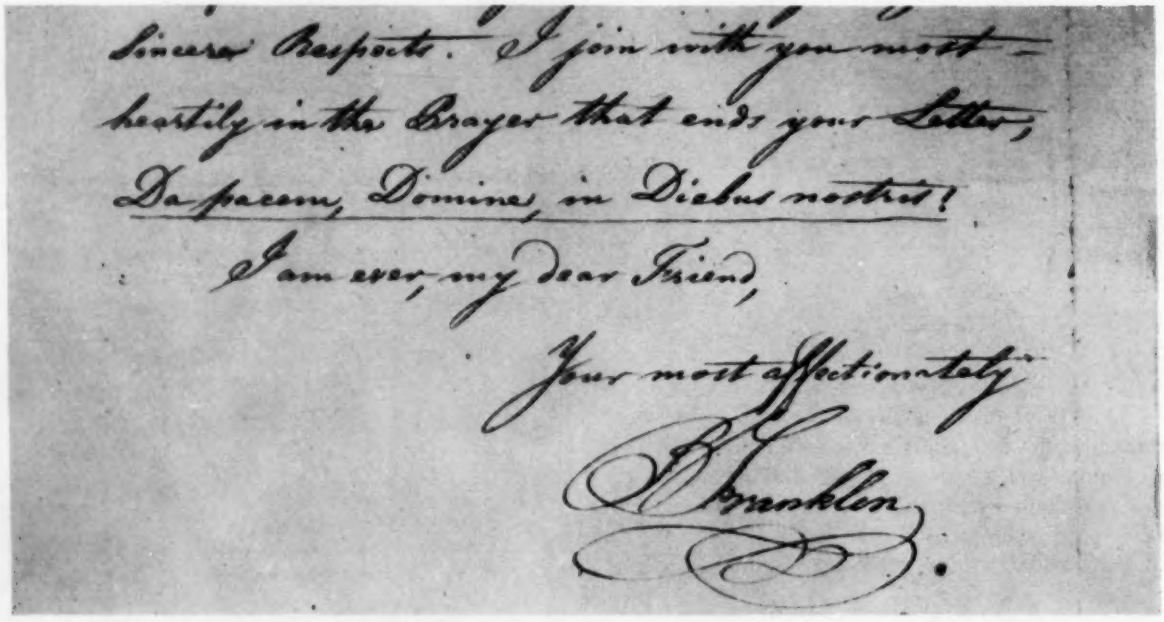
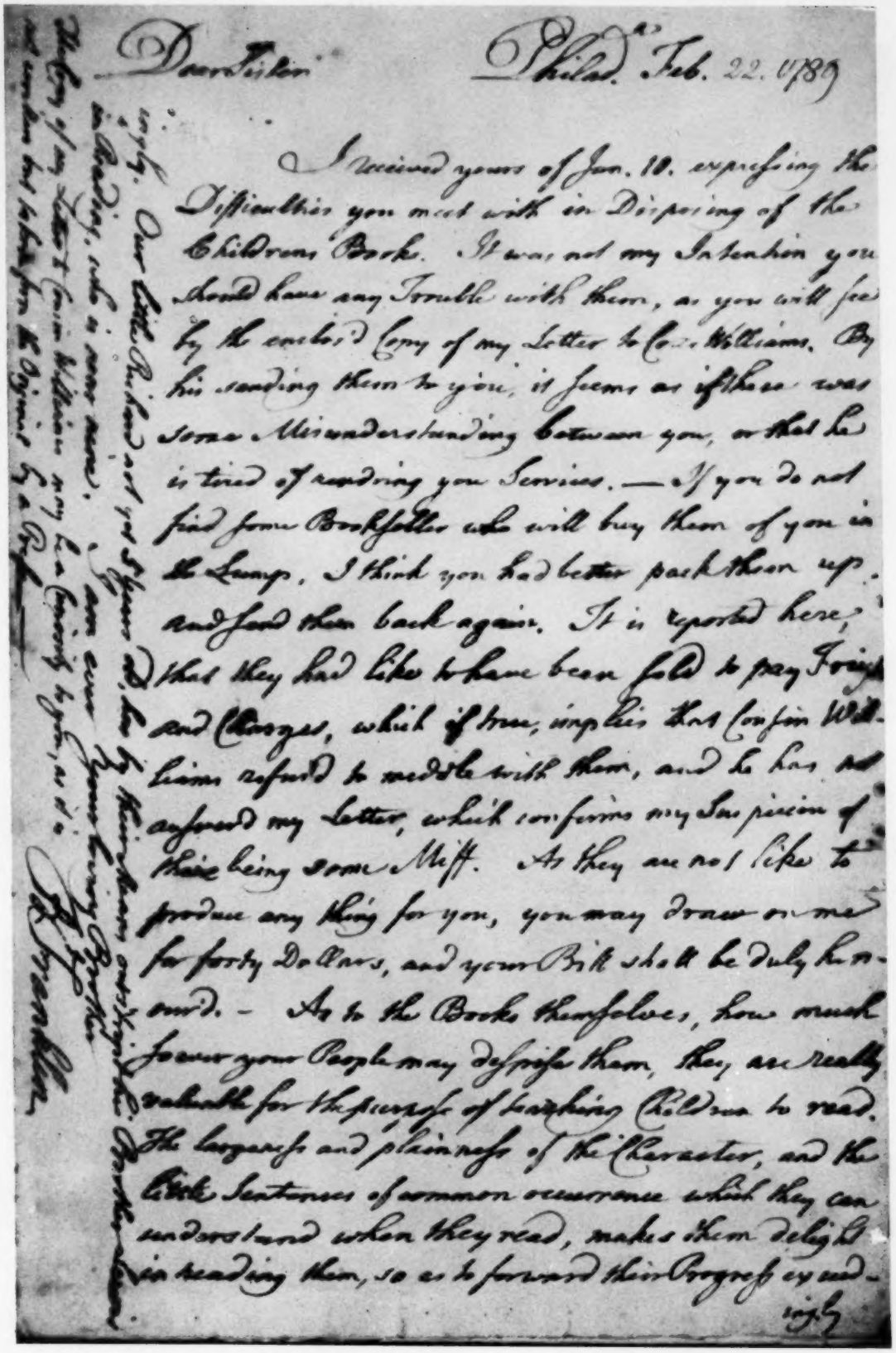

Sincere Respects. I join with you most
heartily in the Prayer that ends your Letter,
Da pacem, Domine, in Diebus nostris!
I am ever, my dear Friend,
Your most affectionately
B Franklin

FIG. 20. An elaborate Franklin signature to his oft quoted letter to his friend, David Hartley, stressing their mutual desire for peace.



Dear Sister Philad.a Feb. 22. 1787

I received yours of Jan. 10. expressing the Difficulties you met with in Dispersing of the Children's Book. It was not my Intention you should have any Trouble with them, as you will see by the enclos'd Copy of my Letter to Cousin Williams. By his sending them to you, it seems as if there was some Misunderstanding between you, or that he is tired of rendring you Services. — If you do not find some Bookseller who will buy them of you in the Lump, I think you had better pack them up, and send them back again. It is reported here, that they had like to have been sold to pay Freight and Charges, which if true, implies that Cousin Williams refused to meddle with them, and he has not answered my Letter, which confirms my Suspicion of there being some Mistt. As they are not like to produce any thing for you, you may draw on me for forty Dollars, and your Bill shall be duly honoured. — As to the Books themselves, how much soever your People may despise them, they are really valuable for the purpose of teaching Children to read. The largeness and plainness of the Character, and the little Sentences of common occurrence which they can understand when they read, makes them delight in reading them, so as to forward their Progress exceedingly.

FIG. 22. Letter to his favorite sister, Jane Mecom. Written at the age of eighty-three, it reveals very little change in the calligraphy of a long life.

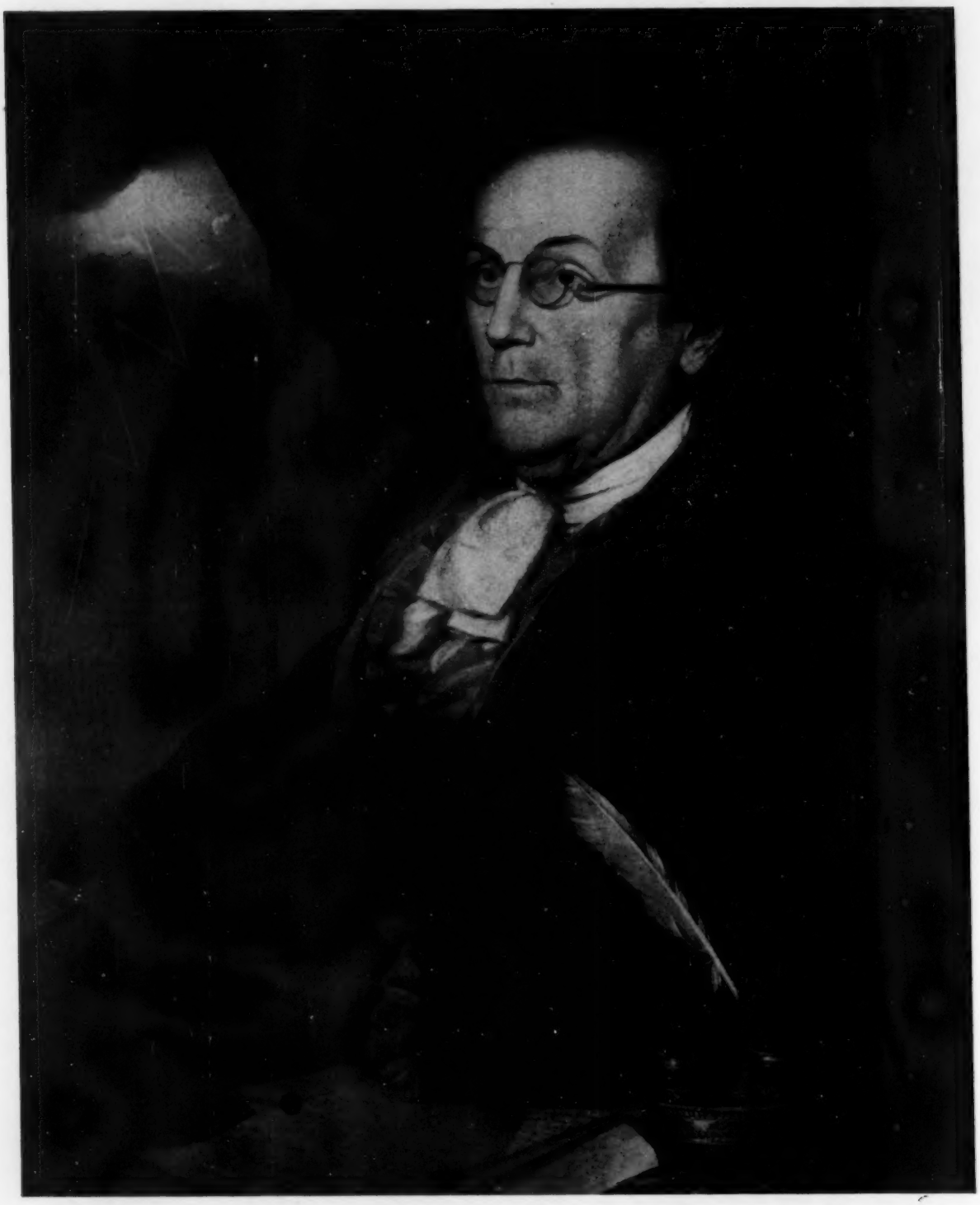


FIG. 23. Portrait of Franklin by Charles Willson Peale in 1790. Courtesy of the Historical Society of Pennsylvania. The inkwell is the original, and, like the quill, suggests B. Franklin, Author.

It involved a firm grasp of the pen, suggestive of wrist and forearm motion. Indeed, in Franklin's case, as in that of Jefferson, we have the physical evidence of an especially designed chair with a copious arm rest (figs. 18, 19) for writing purposes. Hence, although we do not find any reference to the need of a firm base on which to rest the manuscript, Franklin took it for granted. As Clerk of the Pennsylvania Assembly for fifteen years, he had all the conventional equipment for writing, so that even the doodling papers show firmness and clarity.

From what has been said, it is clear that Franklin became remarkably conscious early in life of the importance of good writing. This called for assiduous attention to literary style on the one hand, and consideration of the reader on the other. Legibility and such other devices as seemed to him to make a pleasing effect were thoughtfully developed, not only because they satisfied his respect for the useful and practical, but because they were a source of pleasure to the artist in him. No better illustration of this can be found than the form, address and content of his famous letter to his friend, David Hartley, on "peace in our time" (figs. 20, 21).

As would be expected in the case of one so conscious of the art of writing, as was Franklin, there is an unusual consistency throughout his long life in these matters. Apart from certain copy book characteristics in the early years, but eliminated later, Franklin's calligraphy does not show any radical change except in the degree of pressure, length of the letters, and, of course, the appearance of the flourish. Aside from these things, however, the major characteristics remain to the last, as seen in the following letter to his favorite sister in 1789 (fig. 22). There is very little wavering or other sign of decline. The last paragraph of a letter of March 27, 1788, by John Jay to his old friend, and senior in the great peace negotiations in Paris, reads:

> . . . I see your⁀
> Hand writing has undergone no alteration; and some who were with you in the late Convention, told me that the Steel was not yet worn off, but that you bore as good an Edge as ever⁀
>
> My little family are well, and M^rs^ Jay assures you of her affectionate Remembrance and Regard.⁀
>
> I am very sincerely
> Dear Sir your obliged & ob^t^ Servt
> John Jay⁀
>
> His Excellency Doct^r^ Franklin⁀ [13]

Although the state of Franklin's health and the multitude of his affairs often necessitated the use of an amanuensis in his later years, his own writing, like his Americanism, continued firm and clear to the end, consistent with the amazing activities and mental capacities of our great elder Statesman (fig. 23).

[13] Amer. Philos. Soc. *Franklin Papers*, **36**: 36.

# THE 1706 CHARTER OF THE CITY OF PHILADELPHIA

EDWIN WOLF 2ND

At a meeting of the Common Council of the City of Philadelphia on April 29, 1706 it was

> Ordered that the Recorder, Alderman Story and Robt Assheton do draw a new draught of a City Charter, & incert therein such priviledges as the p[re]sent Charter are deficient in, in order to be sent to the propr[ietar]y for his Concurrence and passing the same. And that the same p[er]sons ————do also draw a Draught of a Letter to the Propr[ietar]y to goe with the same Charter. And that the Aldermen & Comon Council do pay down the present Charge of the charter draught &c to be paid out of the first money in the Treasurers hands. And that a Copy of the s[ai]d Letter be sent to some p[er]son in London to Sollicit the same with the propr[ietar]y by Alderman Shippen & Alderman G. Jones.[1]

The second reading of the draft took place on July 12, at which time a third reading with amendments was ordered for the next meeting. The following day Council "Ordered that the new draught of the Charter be Ingrost with its Amendm[en]ts."[2]

Here then is an indication that in 1706 a new Charter for Philadelphia had been written, passed by the City Council, engrossed on vellum and prepared for William Penn's signature. The intention was to send it to him in England with a covering letter from the Council requesting his approval. At the same time another letter enclosing a copy of the one to Penn was to go forward to a friend in London in hopes that his personal advocacy before Penn would secure the Charter's approval. Neither letter, so far as I have been able to discover, has been preserved, nor have their texts or that of the second Charter ever been printed. Penn was in no mood, as will be seen, to accede to the Council's request. The charter was therefore not signed, never became operative, and until the present has remained forgotten and unknown.[3]

Behind the sending and the rejection lies a story of bitter politics in early Pennsylvania, which has been told in all accounts of the period from the publication of the Franklin-sponsored *Historical Review of the Constitution and Government of Pennsylvania from its Origin*[4] in 1759 to the present. In 1699 when Penn returned a second time to Pennsylvania, he found a strong group of men anxious to get a new charter with more privileges and rights for the Assembly than it enjoyed under the Charter of 1681, the First Frame of Government of 1682, the Great Law of the same year, the Second Frame of 1683, or Markham's Frame of 1696.

Penn had written that "Any Government is free to the People under it (whatever be the Frame) where the Laws rule, and the People are a Party to those Laws, and more than this is Tyranny, Oligarchy, or Confusion."[5] Yet, the instrument under which Pennsylvania was governed contained discordant factors—the prerogatives of a proprietor, the regulations of England's new policy of centralized control, and Penn's idealistic principles.[6] His principles, his belief in religious and political freedom, were sincere enough on a philosophical plane; Pennsylvania was a holy experiment. But, when he found out that the much he had given was not enough, he was puzzled, hurt, and eventually incensed. Penn was patriarchal, and, as Dobrée shrewdly observed, "on the upper levels of consciousness, in his brain, he was democratic, but fundamentally he believed in autocracy."[7] This ambivalence made his relationship with the representatives of a popular assembly difficult. His authority as true and absolute proprietor,

[1] *Minutes of the Common Council of the City of Philadelphia*, 36, Phila., 1847.

[2] *Ibid.*, 41.

[3] I did find such an unexpanded reference as "a request to the Proprietary by the City Corporation for a new charter enlarging its powers, which, however, was not granted," Charles P. Keith, *Chronicles of Pennsylvania* **2**: 466, Phila., Patterson and White, 1917.

[4] This work, long attributed to Franklin, states the case of the Province of Pennsylvania against the proprietary government, and stresses similar difficulties which had taken place before. It was actually written by Richard Jackson, an English lawyer, although Franklin supplied most of the information and printed it at his own expense.

[5] In the Preface to the 1682 Frame of Government, as printed in *Votes and Proceedings of the House of Representatives of the Province of Pennsylvania* **1**: xxvii, Phila., 1752.

[6] Charles M. Andrews, *The Colonial Period of American History* **3**: 281, New Haven, Yale Univ. Press, 1937.

[7] Bonamy Dobrée, *William Penn, Quaker and Pioneer*, 303, Boston, Houghton, Mifflin Co., 1932.

tempered though it was with humanitarianism, was in basic conflict with "the determination of the popular assembly to put into practise those principles of government that were finding application in other English colonies in America and represented the liberalizing trend that characterized the vigorous political life of Charles II's England."[8] America seemed to create in its pioneers a desire for more and ever more self-government, and Penn was unable to understand or accept the phenomenon.

The key figure in the opposition was David Lloyd, at the time Attorney-General of Pennsylvania and the acknowledged defender of the privileges of the popular assembly. In 1700 Penn made an inveterate enemy of him. Perhaps he felt that Lloyd personally was responsible for the dissatisfaction with the existing Charter. He certainly wanted to get him out of the Council, and so restrict his influence. Consequently, Penn permitted his own former antagonist Judge Quary to enter charges against Lloyd for resisting the enforcement of the Acts of Trade and Navigation. Lloyd, pending trial, was removed from his office and suspended from the Council. He never forgave Penn the indignity, and his life-long enmity against the proprietor and his secretary, James Logan, Andrews called "one of the most striking features of Pennsylvania history in the early eighteenth century."[9]

The historical appraisal of Lloyd's career has usually depended upon the point of view of the historian. Those who tried to paint Penn in his most favorable aspect wrote off Lloyd as a vindictive and unscrupulous politician, who through demagoguery led the people astray. Others who looked upon the proprietary government as a reactionary force hailed Lloyd as one of the earliest fighters for democratic principles in America. Neither extreme is completely true. "The contest was not with 'the people' but with an assembly elected on a limited franchise and controlled by an oligarchy of Quaker leaders."[10] Furthermore, there was general agreement that Lloyd was the most able lawyer in Pennsylvania at the time, and "probably exerted the greatest single influence on the character of its early legislation."[11] Both Penn and Lloyd are blameworthy for their personal animus and the extremes to which it caused each to goad and annoy the other; neither in his political thinking was as outrageous as his opponent characterized him.

It was a new Charter of Liberties which provided the first bone of contention in 1699. When the Council asked him for one, Penn asked back in amazement whether they thought the old Charter living, dead, or asleep. Soon, however, he gave them permission to study it, revise it where necessary, and submit a draft for his approval. There followed series of conferences, drafts and counterdrafts, amendments and counteramendments, discussion and debate conducted with considerable acrimony. At one point the Assembly threw back the old Charter at Penn, who bluntly told them that, since they were dissatisfied with the one they had and could not agree on a new one, he would rule them under the King's Letters Patent. The inconclusive discussion dragged on. Suddenly, on September 10, 1701, Penn informed the Assembly that he must soon leave for England to look out for his interests there, for news had come that with the outbreak of the war with France all colonial charters might be revoked to make proprietary colonies into royal ones. At the same time he advised them to "Review again your Laws, propose new Ones that may better your Circumstances, and what you do, do it quickly."[12] As late as the middle of October he was still urging the legislators to "Yield in Circumstantials to preserve Essentials."[13] Under pressure of Penn's imminent departure, the Assembly finally accepted what concessions he was willing to make. On October 25, 1701 Penn signed the Charter of the City of Philadelphia, and three days later the Charter of Liberties of Pennsylvania.

They were the most liberal documents of their kind up to then promulgated in America, but to be sure there were weaknesses and equivocalities in both,[14] which could and did become sore spots

[8] Andrews, *op. cit.* **3**: 305.

[9] *Ibid.* **3**: 316n.

[10] *Ibid.* **3**: 321. This is a point which has been frequently obscured. Lloyd was not fighting for democratic rights in the modern sense, but for the rights of the propertied residents.

[11] *Dictionary of American Biography* **11**: 329–330, N. Y., Charles Scribner's Sons, 1946, where the sources of the various appraisals of Lloyd's career are given.

[12] *Votes, etc.* **1** (1): 143.

[13] *Ibid.* **1** (1): 157.

[14] A realistic summary of Penn's Charters is to be found in Edward C. O. Beatty, *William Penn as social philosopher*, 42–80, N. Y., Columbia Univ. Press, 1939. He underlines the point made by Andrews, cited above, in the statement that "the government of Philadelphia [was] not a democracy, either direct or representative, but an oligarchy," p. 74.

between the proprietor and anti-proprietary legislators. No sooner had Penn left the colony than political troubles flared up anew. At first, the question of the union or separation of the Assemblies of Pennsylvania and the three counties of Delaware held up all legislative action, and it was not until late in 1703 that the Pennsylvania Assembly, minus the Delaware counties, first met in accordance with the provisions of the Charter, which it did merely to constitute itself and adjourn.

In February 1704 John Evans, a young and inexperienced man, arrived in Philadelphia as Penn's deputy-governor. The political situation called for diplomacy and wisdom to preserve the delicate balance of powers between the proprietary and the Assembly. These qualities Evans lacked. His headstrong and frequently arrogant behavior even alienated the support of some men sympathetic to Penn's interests, and was like oil poured on the embers of the opposition of the Quaker majority who were seeking more power for the resident freemen of the province.

It is not within the scope of this paper to describe in detail the disputes which continued for years thereafter and to a large extent blocked constructive action on the part of the Governor and the Assembly. Scharf and Westcott sum up that period in a few words:

> A constant struggle was going on, but it had no variations. The same issues were being fought out, over the same familiar ground and by the same parties. The interests of the crown, the interests of the proprietary, the interests of the people, did not harmonize; there was continual and incessant clash, and yet nothing was settled.[15]

As has happened many times since, the problems of Philadelphia and its Charter became one of the issues in the political struggle of Lloyd and his party against Evans, the Governor's Council, and Penn. The history of that particular phase of political activity explains the City Council's actions in 1706.

The first problem to arise under the City Charter was a conflict of authority between the city magistrates and the county magistrates, and on May 24, 1704 the Assembly ordered the preparation of a bill "for the Confirmation of the City Charter of Philadelphia" which would also clarify the powers and privileges of those magistrates.[16] On June 22 it was read the second time "with Amendments," approved, and ordered to be engrossed. Not having heard from the Governor by July 8, the Assembly asked him for a reply and at the same time complained of the shameful behavior of John Guest, a member of the Council, who had told Evans that the "Proposals of the said Bills [were] absurd, unreasonable and monstrous."[17] On July 18 the Governor said that he could not give any answer to the Bill for the Confirmation of the City Charter until the Bill for Regulation of Courts was also brought before him. Such a bill was prepared, but the Assembly became embroiled with Evans on the amendments to the Charter of Liberties, and everything else remained unfinished. On July 26 the Assembly adjourned, its last measure having been to draw up the subject matter of a projected representation to the Proprietor complaining of various injustices. The bill confirming the City Charter remained in the hands of the Governor.

Penn's most loyal adherent and most faithful correspondent in Pennsylvania was James Logan, the Secretary of the Governor's Council. From the Penn-Logan correspondence we get a somewhat prejudiced but rather full account of what was going on. Summarizing the session of the Assembly just adjourned, Logan wrote Penn on September 28, 1704 that three bills had been presented to the Governor,

> the first for explaining the city charter, in which they had crowded so many extravagant privileges and new grants, under pretense of removing doubts, that Judge Mompesson affirms that of London is not to be compared to what they would make it; this so very far out of the way that the governor and council could scarce think it worth while to enter upon consideration of it . . . . The bills are all drawn by David Lloyd, the speaker, and exactly come up to what may be expected from his temper.[18]

Penn, home in England, was perplexed at the state of affairs in Pennsylvania. His hopes for the smooth governing of his colony under the 1701 Charters were disappearing. Rumors of the riotous behavior of his oldest son, William Jr., then in Philadelphia, began to reach his ears. The income which he had expected from proprietary taxes was not forthcoming in the

[15] J. Thomas Scharf and Thompson Westcott, *History of Philadelphia* 1: 175, Phila., 1884.

[16] *Votes, etc.* 1 (2): 5.

[17] *Ibid.* 1 (2): 10.

[18] *Correspondence between William Penn and James Logan and others, 1700–1750* 1: 317, Phila., Hist. Soc. of Pa., 1870.

amount anticipated, and his debts were pressing. The widow and son of his former agent, Philip Ford, had just maliciously entered a claim for £14,000 against him. In his difficulties and disappointments he thought of selling his colony back to the Crown to pay his creditors.

At this point, his old enemy, David Lloyd, began to attack him from long range. Taking the Assembly's approval of the idea of a remonstrance to Penn as approval of a remonstrance itself, Lloyd, after the Assembly had adjourned, wrote it out himself. With it, on October 3, 1704, went a bitter letter to George Whitehead, William Mead, and Thomas Lower, leaders of the English Quakers, asking their help.

> This comes along with a representation or remonstrance from the General Assembly of this province to William Penn, and I am requested, in behalf of the inhabitants here, to entreat that you would lay those things before him, and get such relief therein as may be obtained from him, and if you find him still remiss in performing his promises or engagements towards us, or making terms for himself, as he calls it, we desire you will be pleased by such Christian measures as you shall see meet, to oblige him to do the people justice in those things [in] which this representation shows he has been deficient.[19]

Few incidents in Penn's life rankled more than this. He bridled when he learned from Logan that the Assembly had never approved the remonstrance officially, although Lloyd had implied it, and he bitterly resented the appeal, behind his back as it were, to a pressure group in England who were already looking upon Penn's worldly career with a jaundiced eye. Dr. Comfort was probably right in saying "that Penn did not so much object to granting the wishes of the popular party as he objected to the ungrateful spirit in which the popular demands were made, coupled with the continued refusal of the Assembly to provide for his financial requirements."[20] A man whose pride and pocket are both hurt is not inclined to be amenable.

The letter went off just before the Assembly reconvened on October 15, at which time, according to Logan,[21] Lloyd tried to get approval of his *fait accompli*, but failed. Off to Penn went the whole account of the affair, and so Lloyd's remonstrance and letter succeeded only in making Penn more intransigent than ever. However, the Assembly kept trying, and on October 19 the Bill for Confirmation of the City Charter was read again. The next day the second major question arose as to its provisions. The Governor refused to commission John Budd, who had just been elected sheriff, on the ground that the Charter of Privileges said such an election should take place every three years, and not as the Assembly wanted every year if they pleased.[22] This matter was inconclusively debated during the whole session, and underlined the need for some clarification.

Meanwhile three bills, including that concerning the City Charter, were sent over to England for approval. Logan was disgusted and in December 1704 wrote Penn:

> We are now in such circumstances, that I cannot foresee any probability of being brought into regular order again till under the Crown; and it seems all owing to those unhappy charters which, being designed as favors, are made use of by ill men as tools for mischief.[23]

Penn's reaction to the bills was even more violent. On January 16, 1704/5 he sent his opinion of them to Logan:

> For the three bills, they are the scorn of lawyers and men of sense . . . . Did I give them a charter for fear I should lose the government, to secure them hereafter, and when I have at my great trouble and charge preserved it and them in authority . . . to turn my own charter against me and my posterity, and make head against my officers as if I and they were their greatest enemies, instead of Quary, Moore, &c.? Who ever was so treated? . . . And I desire the governor and my officers will take a little more spiritedness and quickness upon them, and curb their insolences as strictly as they pretend to do irregularities in the corporation.[24]

Things were not actually as bad as Penn's hurt vanity and Lloyd's insolent complaining might lead us to believe. Throughout the whole period Isaac Norris stands out as one who did

[19] *Ibid.* 1: 327.

[20] William Wistar Comfort, *William Penn 1644–1718, A tercentenary estimate*, 148, Phila., Univ. of Penna. Press, 1944.

[21] *Penn-Logan Correspondence* 1: 331–332, prints Logan's notes on the remonstrance.

[22] *Minutes of the Provincial Council of Pennsylvania* 2: 183, Harrisburg, 1828, has the Governor's statement to the Council in which he sets forth his case. Actually, the confusion was caused by different wording in the Charter of Liberties and the City Charter. The former said the Sheriffs were "to serve for three Years"; the latter the freemen of the City and County could choose one "as often as Occasion be," without mentioning a term of office.

[23] *Penn-Logan Correspondence* 1: 350.

[24] *Ibid.* 1: 356.

not allow personal likes or prejudices to obscure his judgment. He realized that Lloyd was doing right things in the wrong way, and he tried at this time and later to point out the justice of some of the complaints, while not condoning the manner in which the complaining was done. On February 13, 1704/5 he wrote Penn begging that, in spite of all the controversy over charters, "they may not be unseasonably oppugned by the chiefs and other magistrates on pretense of weak and mal-administrations."[25] On the other hand Logan's views were not tempered by such judgment, and he advised Penn

> not to set such a value as thou dost upon the Charter granted, for most are of the opinion it is not worth so many pence, and if mine were asked I should rate it much lower.[26]

All this made Penn increasingly angry, and he sounds more like George III at the outbreak of the Revolution than a mild Quaker when he writes his newly appointed Chief-Justice Roger Mompesson of Lloyd and his followers:

> Take them all to task for their contempts, presumption, and riots. Let them know and feel the just order and decency of government, and that they are not to command but to be commanded according to law and constitution of English government.[27]

During the spring and summer of 1705 Penn continued in this same vein, urging Logan to prosecute Lloyd—

> That very villany should be punished in a singular manner; . . . bow him to better manners. . . . I will have that mischievous man, David Lloyd, brought on his knees, as my last letters express it, let his defenders do and say what they will. . . . If they will not part with D. Lloyd from the city, I will part with them, or part them.[28]

Such were the words of the proprietor to his valued friend.

The matter of the revised charters ended for the time being when the Governor informed the Assembly on May 10, 1705 that the bills which had been sent over to England "would certainly have been vacated by her Majesty, beeing look'd on by Men of Skill, to whom they have been shown, as very great Absurdities."[29] Then the elections of 1705 brought a change in the character of the Assembly. Lloyd himself was re-elected from the City of Philadelphia, but enough moderates were elected elsewhere to choose Joseph Growden speaker in his place. As a result a greater degree of harmony with the Governor existed. Legislative work got under way. A revision of the bills objected to by the Queen's Attorney was ordered on October 23, 1705, and David Lloyd, who was one of the very few trained lawyers in Philadelphia at the time, in spite of his opposition point of view, was appointed to do the work.

Yet, Philadelphia problems kept cropping up. On December 3 the Assembly requested the Governor to grant the Mayor and Commonalty of Philadelphia the sole right to recommend and suppress ordinary keepers in the city, which right the Governor had in part usurped. Three days later Lloyd presented a bill for limiting the jurisdiction of the magistracy of Philadelphia, upon which the opinion of the county justices was asked. Permission was given on December 7 for a bill to be brought in to regulate and settle the elections of the City and County of Philadelphia, and on January 12, 1705/6 the Governor passed an act for regulating elections of sheriffs and coroners. In all, a good deal of necessary legislation was passed and approved. Even Logan was satisfied, and wrote Penn on July 27, 1706:

> Together with this comes the body of laws past last Assembly. . . . There are many excellent laboured laws, which, it must be owned, are chiefly owing to David Lloyd. Were it not for that man's baseness, and vindictive spirit against thee, he might have been exceedingly useful; but I doubt he is irreconcilable to thy interest.[30]

Lloyd, however, apparently had little faith in Penn's, and perhaps the Queen's Attorney's, willingness to accept the laws passed, which in some measure would have clarified the ambiguities of the Charters. The Assembly could not just then be used as a sounding board, but he still had control of the City Council, of which he was Recorder. So in April he had introduced the resolution which appointed Story, Assheton, and himself to draw up a new Charter, and the touch of the politician's hand is again obvious in the further recommendation that a copy of the letter, addressed to Penn sending the charter, be also sent "to some person in London."

[25] *Ibid.* 1: 371.
[26] *Ibid.* 2: 9–10.
[27] *Ibid.* 1: 374–375.
[28] *Ibid.* 2: 16–17, 71, 107.
[29] *Votes, etc.* 1 (2): 35.
[30] *Penn-Logan Correspondence* 2: 141.

The tactics were to be the same as with the remonstrance of 1704; George Whitehead was again the main friend at court. In July the revised charter was passed, and it must have come chiefly from the pen of Lloyd, for neither Story nor Assheton had his legal ability.

Logan, of course, learned what had taken place, and wrote on August 10 suggesting that particulars could be obtained from Isaac Norris who was on his way to England:

> As to the Government itself, Isaac will be capable to give thee a sufficient acct. of it, and of the temper of the people, the Corporation especially, which is too much of an *imperium in imperio* for so young a place. They are drawing up a new Charter, to get thee to sign there, but I expect no sight of it. Had I earlier notice of it, I would have sent thee a copy of the present, that thou might compare them, for I do not remember that I ever sent one yet. But I shall move it to Thomas Story to send one. He is appointed by them with David Lloyd to write to thee, but has no penchant that way, for he is really in thy interest at the bottom, and I believe detests all manner of practices against thee. . . . I find there is a short communication held between thy opposites among Friends there, and that corrupted generation here.[31]

Thus Penn had notice of a new City Charter on its way to him, and that the anti-Penn Quakers in England were again being appealed to.

During the summer of 1706 William Penn, Jr., went home, and it may be that he took the City Council's letter and new Charter over to his father, for on November 26 Logan, speaking of the Courts Act, mentioned that it enlarged the powers of the City of Philadelphia "almost as much as by that bill thy son brought over."[32] The letter to George Whitehead and the others also was received. Isaac Norris, writing from London, to Richard Hill in Philadelphia on May 17, 1707, gave witness to the arrival of both the letters and the Charter.

> As to the great complaints laid before G.W., W.M., T.L., and W.C., from our Corporation, &c., I happened the other day to be called into them, and believe have somewhat allayed the heat. They take all to be complaints and requests of the body of Friends. Only honest William Miers happened to inquire where was Samuel Carpenter's and some other hands? and he *knew* Griffith Jones. I told him the names he wanted were, with many scores more, to a paper of another kind, which the Proprietor could produce, and did; which detected the unfriendly way of asking right things, as well as the unfair and illegal composing, finishing, and sending away that remonstrance in 1704; and so I gave a true account of that piece of management. The Corporation have sent over a new Charter to get signed. They only read one paragraph of it whilst I was there, and asked my opinion of it. I was tender of saying anything that might be laid to my door as endeavouring to abridge liberties and privileges, but could not forbear so far, as that I feared they grasped at more than was fit for a new country; for I perceived they would have power of weighing, measuring, and gauging, with many other things which I fear may be pernicious to the growth and freedom of trade.[33]

When the new Assembly was elected in the autumn of 1706 the anti-proprietary party won back control, and David Lloyd was again chosen speaker. He was a stubborn man, and under his leadership the same old political pattern emerged. On October 30, 1706 a petition of "sundry Freemen and Inhabitants of the City of Philadelphia" was presented to the Assembly "desiring leave to bring in a Bill for strengthening and confirming the City Charter, and enabling the Mayor and Commonalty to make By-laws for suppressing of Vice, repairing of Streets, Wharffs, &c."[34] But the Assembly never did pass and get confirmed an amended Charter of Philadelphia. The bickering between the Governor and the Assembly, chiefly over the act for establishing Courts of Judicature, reached such a degree of bitterness that nothing was accomplished. In the middle of the inconclusive tug-of-war Lloyd again decided to remonstrate directly with Penn, as well as indirectly through Whitehead and the others, but this time he made sure that the Assembly approved everything officially. On December 5, 1706 "the Address to the Proprietary, and the Letter to George Whitehead, were signed according to the Order of Yesterday."[35]

Penn's reaction was as violent as could be expected. All the letters and remonstrances arrived, and Penn was exposed to the humiliation of explaining them to the Quaker elders. He blamed Lloyd, quite rightly, for having instigated the business, and wrote to Logan on June 10, 1707 to

[31] *Ibid.* **2**: 146–147.
[32] *Ibid.* **2**: 180.
[33] *Ibid.* **2**: 223–224.
[34] *Votes, etc.* **1** (2): 98.
[35] *Ibid.* **1** (2): 116.

get the Governour and the best of my friends—which, I bless God, are of the best—to bestir themselves, and browbeat that villanous fellow, David Lloyd, who sent his letters to W. Meade, Geo. Whitehead, Thos. Lowry, &c., and remonstrance too, from the Assembly and City.[36]

Meanwhile Isaac Norris was doing all he could to allay the extreme feelings of both sides in England. He told Samuel Carpenter on October 3 that he had just been with Penn, Whitehead, Mead, and others, and had gone over the whole 1704 remonstrance story again "to the best of my memory and the greatest softness and caution I could." Yet writing a postscript four days later, he added

But I think there are some things in the complaint from the Assembly of 1706, that deserve a more particular answer and care to have amended, and I have, between ourselves, expressed myself to the Proprietor, and shall push it by myself, and his friends here, at proper seasons; for I am for having right things done, and no just complaints left for a handle to those who may be glad of them.[37]

Unfortunately for Pennsylvania and Philadelphia the clash of interests and of personalities was such that the moderation of Norris was of no avail. Penn had no intention of signing the revised charter, or himself clearing up the inequities and equivocalities. The session of 1707 saw another remonstrance to Penn, another letter to Whitehead and the Quakers, bills of impeachment against Evans and Logan, the same old round of abuse and counter-abuse. At the same time Penn was being pressed by the suit of the Fords, and was forced to seek the sanctuary of debtors in the Fleet. Pennsylvania affairs slipped out of his tired old hands; Philadelphia never received a second charter from him.

The existence of a 1706 charter, rejected by Penn, is sufficiently clear, as set forth above, but neither the actual document nor its text had been known up to the present. Recently the American Philosophical Society acquired through the Rosenbach Company a document on two sheets of vellum, which was sold in England as a copy of the Philadelphia Charter of 1701, undated, unsigned, with a vellum tab for a seal which was never attached, and with no docket notation or other evidence of provenance. It is written in a clear, early eighteenth-century clerk's hand, carefully prepared and from its appearance intended to be dated, signed, and sealed. An examination of the text showed that it was not the 1701 Charter but a revision of it. In the preamble, it said that a charter had been granted in 1701, but "whereas several doubts and questions have arisen concerning some of the jurisdictions and powers granted by said Charter, now for the removing and avoiding of which doubts and questions, and to the intent that the Mayor and Commonalty of the said City of Philadelphia and their successors may the better and more quietly have, hold and enjoy the rights, franchises and liberties," this new grant is being made. Such a statement would certainly fit the 1706 Charter.

Furthermore the changes in the text itself fit in with the events summarized above. Among the new provisions was one stating that the Mayor should be qualified before the Recorder and Aldermen, instead of before the Governor as in the earlier Charter. The whole section concerning Courts was completely rewritten, and specific statements made that County Justices and City Magistrates should not intermeddle in each other's jurisdictions. The section concerning the election of Coroners and Sheriffs was tentatively phrased, setting forth provisions to go into effect "as soon as that method of electing Coroners and Sheriffs, which of late hath been used and is now endeavoured to be established by a law of this Province, shall happen to be laid aside or the manner of electing either of Coroner or Sheriff be discontinued." A whole new element covering the supervision of trade practises, which Isaac Norris specifically mentioned, appeared for the first time. In short, all the points at issue between the popular party and the Governor are treated and set forth in accordance with the views of the former. The voice was the voice of the City of Philadelphia, but the hand was David Lloyd's.

Two other pieces of evidence bear out the fact that this is indeed the unknown 1706 Charter which the City Council ordered engrossed and sent in blank to Penn for his signature. With the vellum document is an eleven-page paper copy of the 1701 Charter, the first six and one-half pages written by the same clerk who wrote the vellum grant, and the rest in an unidentified non-professional hand. The presence of this copy would indicate that Logan was as good as his word and did get Thomas Story to have it

[36] *Penn-Logan Correspondence* 2: 229.
[37] *Ibid.* 2: 244–245.

made so that Penn could compare the revised version with the original. The second point lies in the clerk's handwriting. While it is not an easy matter to identify with certainty any formal hand of the period, the writing of the vellum charter and the first six and one-half pages of the paper copy appears to be in every respect identical with that of the body of the letter of December 4, 1706, sent by the Assembly to George Whitehead and others, now in the Historical Society of Pennsylvania. Since these were all official papers, a formal scribe's services would have been used, and there could not have been many of such specialists in Pennsylvania at the time. In the same resolution of the Assembly which recorded the signing of the letter to Whitehead, that body gave to Thomas Makin "an Order upon the Treasurer, for Payment of so much as the Copies of the said Votes, and Minutes of the Assembly, and other Writing done for the immediate Service of this House, shall amount to, after the Rate of [blank in the original] for every sheet."[38] Hence, it would seem that the first part of the copy of the 1701 Charter and the original of the 1706 Charter were carefully penned by the scribe who was doing work for the Pennsylvania Assembly.

As a charter never validated, the 1706 grant was not preserved or printed among the state papers. Penn, determined not to sign it, may have left it in the hands of George Whitehead or one of the others to whom Norris states it was shown. Its history since 1706 is not known, but now it reappears—the Second Charter of the City of Philadelphia, rejected by Penn and up to the present lost to historians.

## THE TEXT OF THE PROPOSED CHARTER OF 1706

WILLIAM PENN Esquire True and Absolute Proprietary and Governour of the Province of Pensilvania To All To whom these p$^{r}$sents Shall Come Greeting

WHEREAS the late King Charles the Second By his Letters Patent vnder the Great Seal of England bearing date the ffourth day of March In the Three and thirtieth year of his Reign Was graciously pleased (amongst other Things) to Grant vnto me by the Name of WILLIAM PENN Esquire Son and Heir of S$^{r}$. WILLIAM PENN deceased And to my Heirs and Assigns ffree and Absolute power to Divide this Country into Towns Hundreds and Counties And to Erect and Incorporate Towns into Burroughs And Burroughs into Citys And to Make and Constitute ffairs and Markets therein With All Convenient Priviledges and Im̄unities According to the Merits of the Inhabitants & fittness of the Places And to do all and every other Thing and Things touching the premisses which to me or them Should Seem Meet & requisite Albeit they shall be Such as of their own Nature might otherwise Require a more Speciall Com̄andment and Warrant than in the said Letters Patent is Expressed As by the Same Letters Patent may more fully appear

AND WHEREAS Vpon my first Settlement of this Province I have divided a Certain Part or Parcell thereof into a Town Which I Called PHILADELPHIA Extending about Two Miles in length And about One Mile in breadth Bounded Eastward with the River Delaware Southward with a Strait line drawn from the said River Delaware to Skuylkill River (Which Line divides the S$^{d}$. Town from the Lands belonging to Wiccako and the Lands now of Edward Shippen Ruth Ducket and others) Westward with the said River Skoolkill And Northward with the Tract of Land formerly called Hartsfield late in the Tenure of Daniel Pegg so farr as the same Tract Extends from the said River Delaware Westward, And then vpon a Strait line parralell with the other Line above mentioned down to the said river Skoolkill

WHICH said Parcell of Land being built vpon and Inhabited by Many of those who were the first Purchasers of Lands and Adventurers with me into this Country

I HAVE pursuant to the Powers granted me by the said Letters Patent And by Authority of the same Erected the said Town of Philadelphia into a Burrough And by my Grant or Charter vnder my Hand and Great Seal of the said Province Dated the ffive and twentieth Day of October Año Dñi 1701 ffor the Motives and Consideracons therein mentioned I have Erected

[38] *Votes, etc.* 1 (2): 116. While Thomas Makin, who was then a teacher, and later became principal, of the Friend's School at South Fourth Street, would have been a logical person to have been employed as official scribe, the writing of the Charter does not in the least resemble specimens of his hand in the Historical Society of Pennsylvania, and I therefore assume that he arranged for the formal transcription, rather than wrote it himself.

the said Town and Burrough of Philadelphia into a City.[39]

AND I did for me and my Heirs and Assigns thereby Grant and Ordaine That the Streets of the said City Should forever Continue as they were then layd out and Regulated And That the Ends of each Street Extending into the River Delaware Should be and Continue free for the Use and Service of the said City & Inhabitants thereof Who might Improve the same for the best Advantage of the said City And Build Wharfs so farr out into the River as the Mayor Aldermen and Comon-Councill men therein after mentioned Should see Meet[40]

AND I did by the same Charter Nominate and Appoint the Severall Psons therein named to be the then Mayor Recorder, Sheriff, Town-Clerk, Alderman, and Comon-Councill Men of the said City respectively[41]

AND I did by the Same Grant or Charter for me my Heirs and Successors Give Grant and Declare That the s$^{d}$. the said [sic] Mayor Recorder Aldermen and Comon Councill men for the tyme being And they which then after should be Mayor, Aldermen and Comon Councill men within the said City And their Successors forever thenafter Should be ONE Body Corporate and Politick in Deed & in Name And by the Name of MAYOR and COMONALTY of PHILADELPHIA in the Province of PENSILVANIA; And them by the Name of MAYOR & COMONALTY of the CITY of PHILADELPHIA One Body Politick and Corporate in Deed and in Name I Did for me my Heirs and Successors fully Create Constitute and Confirm by the Same Charter AND That by the same Name of Mayor and Comonalty of the City of Philadelphia they might have ppetual Succession

WITH divers Powers ffranchises Iurisdictions Rights Priviledges and Imunities As by the said Charter relation being therevnto had may more at large appear

AND WHEREAS Severall Doubts and Questions have Arisen concerning Some of the Iurisdiccons and Powers Granted by the said Charter

NOW FOR the removing and Avoyding of which Doubts and Questions And to the Intent that the Mayor and Comonalty of the sd City of Philadelphia and their Successors may the better and more quietly have hold and Enjoy the Rights ffranchises and Liberties As well as Exercise the Iurisdictions and Power in the said Charter mentioned or intended by me to be granted VNDER the Provisos Restriccons and Explanations in these presents mentioned

THEREFORE KNOW YE That I the said WILLIAM PENN ffor divers good Causes and Considerations me Specially moving[42]

HAVE According to the Powers Granted Vnto me by the said Letters Patent vnder the Great Seal of England And by Authority of the same Given and Granted And by these p$^{r}$sents for me my Heirs and Assigns Do Give Grant and Declare THAT the Mayor Recorder Aldermen and Comon-Councill men of the said City of Philadelphia Who now are And they which hereafter for the time being Shall be Mayor Recorder Aldermen and Comon-Councillmen within the same City and their Successors forever be And they Shall and may forever hereafter remaine Continue and be A BODY POLITICK & CORPORATE in Deed and in Name by the Name of MAYOR & COMONALTY of the CITY OF PHILADELPHIA in the Province of Pensilvania AND them by the Name of Mayor and Comonalty of the City of Philadelphia One Body Politick and Corporate in Deed and in Name I DO for me my Heirs and Assigns fully and absolutely Confirm by these p$^{r}$sents

[39] I have placed my notes at the end of sections or groups of sections, and either given the corresponding text of the 1701 Charter or commented on it. The original document was not broken up into sections, but this I have done for greater clarity. I have used the 1701 text as printed in *Votes, etc.* 1 (2): iv–viii. In the 1701 Charter the following appeared in place of all preceding the note number: "WILLIAM PENN, Proprietary and Governor of the Province of Pennsylvania, &c. To all whom these Presents shall come, sends greeting. KNOW YE, That at the humble Request of the Inhabitants and Settlers of this Town of Philadelphia, being some of the first Adventurers and Purchasers within this Province, for the Encouragement, and for the more immediate and entire Government of the said Town, and better Regulation of Trade therein, I have, by Virtue of the King's Letters Patents, under the Great Seal of England, erected the said Town into a Borough, and by these Presents do erect the said Town and Borough of Philadelphia into a CITY; which City shall extend the Limits and Bounds, as it is laid out between Delaware and Schuylkill."

[40] With the exception of "did" here, where it reads "do" in the Charter of 1701 this section is virtually the same.

[41] In the 1701 Charter Penn gave the names of his first appointees.

[42] These sections, a kind of explanation, are new.

AND That by the same Name they may have Ppetuall Succession AND that they and their Successors by the name of Mayor and Comon-alty of the City of Philadelphia be and at all times hereafter Shall be Psons Able and Capable in Law to have Get receive and Possess Lands Tenements Rents Liberties Iurisdiccons ffranchises and Hereditaments to them and their Successors in ffee Simple Or for Term of Life Lives or Years or Otherwise And also Goods Chattles or other things of what Nature Kind or Quality so ever

AND also to Give Grant Lett Sett and Assign the same Lands Tenements and Hereditaments Goods and Chattles And to Do and Execute all other things about the same by the Name aforesaid[43]

WITH Power also to have and vse a Comon Seal And the same to Alter and Change at their Pleasure

AND by that Name to Sue and be Sued Plead and be Impleaded To Answer and be Answered[44]

AND I Do for me my Heirs and Assigns Give and Grant full Power & Authority Vnto the Mayor Recorder Aldermen and Comon-Councill of the Said City of Philadelphia Or any ffive or more of the Aldermen And Nine or more of the Comon Councill Men (The Mayor and Recorder for the time being or either of them being present) On the first Third day of the Week in October Yearly forever hereafter According to the direction of the said Charter to Meet and Elect a Mayor for that Ensuing Year And Add to the Number of Aldermen and Comon-Councill men Such or Somany of those Who are or Shall be Admitted ffreemen of the said City from time to time As they the said Mayor Aldermen and Comon Councill Shall See Occasion[45]

AND that Such Pson as Shall be so Elected & Chosen Mayor as aforesaid Shall within three Days next after such Election be presented by his last Predecessor then living before the Recorder Aldermen and Comon Councill of the said City for the time being Or before any ffive or more of the sd. Aldermen And there shall Subscribe the Declaracon and Profession of his Christian belief According to the late Statute made in the ffirst Year of the Reign of King WILLIAM and Queen MARY Entituled AN ACT for Exempting their Majesties Subjects Dissenting from the Church of England from the Penalties of Certain Laws (Changing what is to be Changed) And then and there every Such Mayor Shall Take his Sollemn Affirmacon or Attest and Ingagement for the due Execution of his Office AND That the said Mayor so to be Chosen as aforesaid Shall Remain and Continue in the said Office vntill Another fitt pson shall be Chosen and Attested in his place of Mayor of the Said City in mañer aforesaid WHICH Affirmation as also the sd. Declaracon & Test the said Recorder Aldermen and Comon-Councill Or any ffive or more of the Aldermen Shall and may lawfully Administer And have hereby Power to Administer vnto the said Mayor So Elected from time to time accordingly[46]

AND That the Recorder Sheriff Town Clerk Aldermen and Comon-Councill men and all others Who Shall be Elected or made Officers of the said City before they or any of them Shall be Admitted to Execute their respective Offices Shall Make and Subscribe the sd Declaracons and Profession aforesaid before the Mayor for the time being And at the same time Shall be Attested for the due Execution of their Offices respectively WHICH Declarations Promises

[43] With the exception of a few minor phrases virtually the same.

[44] In the 1701 Charter in lieu of the two phrases above there appears: "and also that they be and shall be for ever hereafter Persons able and capable in Law, to sue and be sued, plead and be impleaded, answer and be answered unto, defend and be defended, in all or any Courts and other Places, and before any Judges, Justices, and other Persons whatsoever within the said Province, in all Manner of Actions, Suits, Complaints, Pleas, Causes and Matters whatsoever, of what Nature or Kind soever. AND that it shall and may be lawful to and for the said Mayor and Commonalty of the said City of Philadelphia, and their Successors, for ever hereafter, to have and use one common Seal for the sealing of all Businesses touching the said Corporation, and the same from time to time at their Will and Pleasure to change or alter."

[45] Almost the same, but the 1701 Charter provides for them "publickly to meet at a convenient Room or Place within the said City, to be by them appointed for that Purpose, and then and there nominate, elect and chuse one of the Aldermen to be Mayor," whereas the 1706 Charter does not specify that the nominee must be an alderman, and only provides for them "According to the direction of the said Charter to Meet and Elect a Mayor."

[46] This is one of the significant changes, for in the 1701 Charter the Mayor was to "be presented before the Governor of this Province or his Deputy for the Time being" for qualification. No mention is made in the earlier charter of the provision for the mayor to remain in office until his successor be qualified.

Attests and Affirmacons the Mayor of the said City for the time being is hereby Impowered to Take and Administer According to the true meaning of the said Charter[47]

AND I Do for me my Heirs and Assigns By Vertue of the said Letters Patent Grant And by these prsents Confirm vnto ye said Mayor and Comonalty of the said City of Philadelphia and their Successors That the Mayor Recorder and Aldermen of the said City for the time being Shall be And are hereby Declared to be Iustices and Keepers of the peace of our Soveraign Lady Queen ANN and her Successors and Iustices of Oyer and Terminer And of Gaol delivery within the said City and Precincts thereof And are and each of them is hereby Impowered to Hear and Determine Debts and Demands vnder fforty Shillings as any Iustice of the Peace may or can do by the Law of this Province AND to hold Courts for that purpose And to keep and Cause to be kept the peace And all the Acts and Statutes and Ordinances made or to be made for the Publick Good and Conservation of the peace of our said Lady the Queen her Heirs and Successors And for the quiet Rule and Government of the People within the said City and Precincts As well by Land as by Water And according as those Acts Statutes and Ordinances do or Shall direct to Punish and Correct all Persons Offending against the same or any of them as ought to be done According to the form and Effect of those Acts Statutes and Ordinances

AND to Cause to Come before them the said Iustices or any of them all such Psons as shall threaten any of the People of our said Lady the Queen her Heirs or Successors concerning their Bodies or Estates to find Sufficient Security for the Peace or for the Good Behaviour towards the Queen and her people And if they refuse to find such Security then to Cause them to be safely kept in the Gaol or Prison of our Lady the Queen within the said City of Philadelphia vntill they shall find such Security

AND to do and Execute all other Matters and Things which any Iustice or Iustices of the Peace within this Province may or Can do out of Court or Sessions According to the said Acts or Ordinances[48]

AND I Do Pursuant to the Power given me by the said Letters Patent for me my Heirs and Assigns Grant to the Mayor and Comonalty of the sd City of Philadelphia and their Successors That the said Mayor Recorder and Aldermen of the said City for the time being or any four of them (Whereof I appoint the Mayor or Recorder and one of the Senior Aldermen to be Two) Shall by Vertue of the said Letters Patent be the Iustices of our said Lady the Queen her Heirs and Successors And Shall and may hold and keep a Court of Record or Sessions quarterly Oftner if they See Occasion for the said Lady the Queen her Heirs and Successors To Inquire by the Sollemn Affirmations of Good and lawfull men of the said City by whom the Truth may be better known of all and all maner of ffelonies Misdeeds and Offences of and concerning which Iustices of the Peace Iustices of the County Court of Sessions And Iustices of Oyer and Terminer or of Gaol Delivery by the Laws of this Province may or ought lawfully to Inquire by whomsoever or howsoever Done or Perpetrated Or which hereafter Shall be done or Attempted within the Precincts of the sd. City And of all those who in the City aforesaid have Gone or Riden Or hereafter Shall Presume to go or Ride in Companies with Armed fforce against the Peace to the Disturbance of the People And also of all those who have lain in Wait or hereafter Shall presume to Lie in Wait to Maim or Kill any of the Subjects of our said Lady the Queen her Heirs and Successors AND also of Innholders and Keepers of Taverns and Alehouses And of all Hostlers and other Psons who have Offended or hereafter Shall presume to Offend in the Abuse of Weights and Measures Or in Selling of Victualls against the form of the Ordinances and Statutes made or to be made for the Comon Good and Profitt of the Queen's Subjects

AND also of all Sheriffs Gaolers Constables and other Officers whatsoever Who about the premises or any of them did or shall Vnlawfully Demean themselves Or have been or Shall be Careless or Negligent in Execution of their Offices within the said City AND of all and Singular Articles and Things whatsoever made and Comitted Or which henceforth Shall be

[47] This is the same in both charters.

[48] All the sections relating to the Courts were completely rewritten and expanded in the 1706 Charter. This section read: "AND that the Mayor, Recorder and Alderman of the said City, for the Time being, shall be Justices of the Peace, and Justices of Oyer and Terminer; and are hereby impowered to act within the said City and Liberties thereof accordingly, as fully and amply as any Justice or Justices of the Peace or Oyer and Terminer, can or may do within the said Province."

made or Attempted any way concerning the premises or any of them in the City aforesaid AND to Inspect all Indictments before the said Iustices or any of them Taken or to be Taken or made before the late Mayor Recorder and Aldermen of the said City or any of them in the s$^{d}$. City And not as yet Determined AND to make and Continue the Process therevpon against all Psons Indicted Or which hereafter Shall happen to be Indicted before the said Iustices vntill the said Persons be Apprehended Render themselves or be Outlaw'd

WITH POWER also to hear and Determine all and Singular the Incests Adulterys ffornications Poligamies Robberies Grand and Petty Larcenies Transgressions false Conspiracies Vnlawfull Maintenances Champerties Barrettries fforestallings Regratings Ingrossings Extortions ffrauds and Deceits of Persons getting Money or other Things by ffalse Tockens or Counterfiet Letters in any other Psons name Or of Tanners Shoemakers or other Tradesmen making their Manufacture Or Vsing their Trade deceitfully, Assaults Batteries Bloodsheads Maihems fforcible Entries fforcible Detainers Nusances Incroachments Disorders between Masters and Servants Disorders in Alehouses and Taverns Vnlawfull Gaming Entertaining Inmates Vnlawfull Assemblies Riots Routs And Indictm$^{ts}$. aforesaid and all and Singular the premises And all other Crimes and Offences of what Natures Names or Qualities So ever they be done or Comitted Or to be done Ppetrated Comitted or Happening within the Precincts of the said City against the Comon Law or against the form of Any Law or Constitution of this Province

EXCEPTING Treasons Murthers and Such other Crimes as are or Shall be by the Laws of this Province made ffelonies of Death.

AND to Chastize and Punish all Psons Offending and every of them ffor their Offences by ffines Ransomes Amerciaments fforfietures and otherwise as ought and hath been Vsed to be done According to Law and the fform of the Acts and Ordinances aforesaid

AND to Comitt to Prison Lett to Bail and Discharge Offenders of or for Offences or Crimes Cognizable before them the said Iustices AND to Take Recognizances and Obligacons in such Cases as the Law doth or Shall direct

AND WITH POWER also to Take Care of Orphans within the said City AND to hold and keep a Court of Orphans as often as there may be Occasion

AND GENERALLY to minister comon Iustice And to Do Exercise Hear Determine and Execute all Things within the said City and Liberties thereof According to Law as fully & Effectually as any Iustices of the Peace Iustices of the Orphan's Court or of the County Court of Sessions Iustices of Oyer & Terminer Or of Gaol delivery may or can do within any County of this Province

AND I Do by these p$^{r}$sents Grant and Ordain That the Mayor Recorder and and [sic] Aldermen of the said City for the time being and their Successors Or anv Two of them (Whereof the Mayor or Recorder to be one) Shall have full Power and Authority by Vertue of these presents within the sd City and Precincts thereof to Remove Discharge and put away Comon Selling of Ale Beer Wine or other Liquors in the Comon Alehouses Taverns Inns Ordinarys & Victualing-Houses within the said City as they shall think meet and Convenient And that none Shall be hereafter Admitted or Suffered to keep any Tavern Alehouse Inn or Victualing house within the sd City but such as Shall be therevnto Lycenced Admitted and Allowed in the said Court or Sessions Or else by Three of the S$^{d}$. Iustices Whereof the Mayor or Recorder to be One AND That the said Iustices or any Three of them Whereof the Mayor or Recorder to be One Shall Take Bond and Suertie from time to time by Recognizance of Such as Shall be Admitted and Allowed hereafter to keep any Tavern Alehouse Inn or Victualing House As well against the Vsing of Vnlawfull Games as for keeping Good Rule and Order According to the Discretion of the same Iustices

AND I Do by these p$^{r}$sents Constitute and Appoint That the Recorder of the sd City for the time being Shall be Custos Rotulorum of the said City

AND That no other Keeper of the Peace Iustice Comission$^{r}$. or Minister whatsoever Shall Intermedle in the premises or any of them (Except before Excepted)

AND I Do by these presents for me and my Successors Inhibit and fforbid all and every the Comission$^{rs}$ Assigned and to be Assigned for

keeping the Peace Comission[rs] of Oyer and Terminer Or of Gaol Delivery of the County of Philadelphia for the time being That they or any of them Do not Intermedle with or Exercise any Iurisdiction as Iustices of the Peace Or as Iustices of Oyer and Terminer or of Gaol delivery for any Matter or Thing Arising within the said City and Liberties and Precincts thereof for or concerning any Offence or Offences whatsoever (Except before Excepted)

AND I Do hereby require and Comand the Sheriff Coroner and Citizens of the said City for the time being That they be Attending Councelling Answering and Aiding to the Mayor Recorder and Aldermen and every of them In Execution of the Premisses when and as often as they Shall be duely required by them or Some or one of them in the Behalf of the Queen her Heirs and Successors

AND I Do by these p[r]sents for me my Heirs and Assigns Grant and Confirm vnto the sd Mayor and Comonalty of the said City and their Successors All Recognizances Taken or to be Taken Acknowledged or to be Acknowledged fforfieted or to be fforfieted for appearance or Bailing of Prisoners at any Session or Sessions of Gaol Delivery Or at any Court or Sessions holden or to be holden before the Mayor Recorder and Aldermen of the said City as aforesaid Or any other Iustices of our said Lady the Queen Assigned or to be Assigned for or Concerning the Peace or Gaol delivery in the sd City of Philadelphia AND also all and all mañer of Recognizances Taken or to be Taken Acknowledged or to be Acknowledged fforfieted or to be fforfieted or not Observed before the said Iustices Or before any other Iustice or Iustices for or concerning the Peace in the same City Assigned or any of them ffor y[e] Peace and Security of the Peace & good Behaviour And for and about the Keeping and Maintaining of Bastard Children and the saving harmless the said City touching Such Children Or of Inmates dividing of Houses in or for Severall Habitations Or for Suppressing of Alehouses within the s[d]. City and Liberties thereof And for the Observacon of such like Orders as from time to time have been or Shall be made by the sd Iustices touching the premises

AND ALSO all ffines and Issues of Iurors And all other Issues ffines and Amerciaments fforfieted or to be fforfieted of and for all and Singular the Matters Causes and Occasions aforesd And of and for whatsoever Transgressions Misdeeds violations & Contempts of Laws And of all other the Offences and Crimes aforesaid Comitted or to be done and Comitted within the said City Iudged or to be Iudged fforfieted or to be fforfieted before the Mayor Recorder and Aldermen of the said City for the time being or any of them Or any of the Iustices Assigned concerning the Peace of our said Lady the Queen her Heirs or Successors Or before the Iustices Assigned or to be Assigned to hear and Determine ffelonies Transgressions and Misdemeano[rs] in the sd City and Precincts thereof Or before any Iustices of the said Lady the Queen her Heirs or Successors or any of them in the City aforesaid TOGETHER with the Assessments and Levyes of the same as often and when there Shall Be Need

WITHOUT any Account to be rendred to me my Heirs or Assigns for the same

SAVING to the Queen her Heirs and Successors all Issues or Amerciaments called ffines or Amerciaments Royall hereafter to be Imposed by the Queen's Iustices vpon the Mayor Aldermen Sheriff and Coroner of the sd City for their or any of their Officiall Misbehaviour[49]

[49] The 1701 Charter was far less explicit—"AND that they, or any Four or more of them (whereof the Mayor and Recorder of the said City for the Time being shall be Two) shall and may for ever hereafter have Power and Authority, by Virtue of these Presents, to hear and enquire into all and all Manner of Treasons, Murders, Manslaughters, and all Manner of Felonies and other Crimes and Offences, Capital and Criminal, whatsoever, according to the Laws of this Province, and of the Kingdom of England, with Power also to hear and determine all petty Larcenies, Routs, Riots, unlawfull Assemblies; and to try and punish all Persons that shall be convicted for Drunkenness, Swearing, Scolding, breaking the Peace, or such like Offences, which are by the Laws of this Province to be punished by Fine, Imprisonment or Whipping; with Power also to award Process against all Rioters and Breakers of the Peace, and to bind them, and all other Offenders and Persons of evil Fame, to the Peace or good Behaviour, as any Justice or Justices of the Peace can do, without being accountable to me or my Heirs, for any Fines or Amerciaments to be imposed for the said Offences, or any of them. AND I do hereby impower them, or any Four of them (whereof the Mayor and Recorder for the Time being shall be Two) with the City Sheriff and Town Clerk, to hold and keep a Court of Record quarterly, or oftener, if they see Occasion, for the enquiring, hearing and determining of the Pleas and Matters aforesaid; and upon their own View, or after legal Procedure in some of those Courts, to cause all Nuisances and Encroachments in the Streets of the said City to be removed, and punish the Parties concerned, as the Law and Usage in such Cases shall require."

AND I Do by these P^rsents Assign and Declare That the p^rsent Mayor Recorder and Aldermen and their Successors Shall have full Power and Authority And are here by Impowered and Authorized Without any further or other Comission or Qualification to be Iustices of the Peace Iustices of the County Courts or Comon Pleas Orphan's Court Quarter or Generall Sessions Oyer and Terminer and of Gaol delivery in and for the sd County of Philadelphia And Shall have full Power to Award Process Bind to the Peace or behaviour or Comitt to Prison for any Matter or Cause Arising without the said City within the body of the aforesaid County as Occasion Shall require

AND to Cause Kallenders to be made of Such Prisoners Which together with all Recognizances and Examinations Taken before them for or touching any Matter or Cause not determinable by them Shall be duely returned to the Iudges or Iustices of the County in their respective Courts where the same Shall be Cognizable

AND I Will and Ordain That the Mayor and Recorder of the said City for the time being Shall be allways Two of the Iustices of and in the said Courts for the sd County[50]

AND That It Shall and may be lawfull to and for the said Mayor and Comonalty and their Successors when they See Occasion to Erect a Gaol or Prison and Courthouse or Comon Hall within the said City

AND That the Mayor and Recorder for the time being Shall and by these presents have Power to Take Recognizance for Debts there According to the Statute of Merchants and of Acton Burnell And to Vse & Affix the said Comon Seal therevpon And to all Certificates concerning the same

AND That it shall and may be lawfull to and for the Mayor of the said City for the time being to Nominate And from time to time to Appoint the Clerk of the Market within the said City Who Shall And is hereby Impowered to Do and Execute therein all Such Things which to the Clerk of the Market appertaineth And that no other Clerk of the Market Shall Intermedle there[51]

AND I Will That the Coroner and Sheriff of the s^d. City shall reside within the same City And be the Coroner and Sheriff of the sd County as long as both are Eligible By the People BUT as soon as that Method of Electing Coroners & Sheriffs, Which of late hath been Used and is now Endeavoured to be Established by a Law of this Province, Shall happen to be layd aside Or the mañer of Electing either of Coroner or Sheriff be Discontinued Then and Immediately afterwards I Grant and Ordain That it shall and may MAY [*sic*] be lawfull to and for the said Mayor and Comonalty to Elect & Appoint Such other Pson or Psons as they Shall from time to time think fitt to Serve in the room of the Coroner or Sheriff that Shall be Elected or Comissionated in any other mañer or method than what the said Law directs concerning the Choice of Sheriffs and Coroners[52]

AND That the Sheriff of the s^d. City for the time being Shall be the Water Bayliff Who Shall and may Execute and Perform all things belonging to the Office of Water Bayliff vpon Delaware River And all other Navigable Rivers and Creeks within this Province

AND In Case the Mayor of the said City for the time being Shall during the time of his Mayoralty Misbehave himself or Misgovern in that Office I Do hereby Impower the Recorder

[50] "AND I do by these Presents assign and appoint, that the present Mayor, Recorder and Aldermen herein beforementioned, be the present Justices of the Peace, and Oyer and Terminer, within the said City; and that they and all others that shall be Mayors, Recorders and Aldermen of the said City for the Time being, shall have full Power and Authority, and are hereby impowered and authorized, without any further or other Commission, to be Justices of the Peace, and of Oyer and Terminer, within the said City for ever; and shall also be Justices of the Peace, and the Mayor and Recorder shall be of the Quorum of the Justices of the County Courts, Quarter-Sessions, Oyer and Terminer, and Goal-Delivery, in the said County of Philadelphia." The power to commit to prison and to cause calendars of prisoners to be made is the same in both charters.

[51] The same in both, but it is not stated in the 1706 Charter that the Clerk of the Market "shall have Assize of Bread, Wine, Beer, Wood and other Things," which powers were later given to the Mayor and Commonalty, nor does the phrase about "intermeddling" appear in the 1701 Charter.

[52] This was another of the critical changes. The 1701 Charter said: "AND I will that the Coroners to be chosen by the County of Philadelphia for the Time being, shall be Coroners of the said City and Liberties thereof; but that the Freemen and Inhabitants of the said City shall, from time to time, as often as Occasion be, have equal Liberty with the Inhabitants of the said County, to recommend or chuse Persons to serve in the respective Capacities of Coroners and Sheriffs for the County of Philadelphia, who shall reside within the said City."

Aldermen and Comon Councill men or ffive of the Aldermen and Nine of the Comon-Councill men of the said City of Philadelphia for the time being To Remove Such Mayor from his Office of Mayoralty AND IN such Cases Or In Case of the Death of the said Mayor for the time being That then another fitt Pson Shall within four days next after such Death or Removall be Chosen in mañer as is above directed for Electing of Mayors in the Place of him so dead or Removed

AND least there Should be a ffailure of Iustice & Government in Such Intervall I Do hereby Appoint That the Eldest Alderman for the time being Shall take vpon him the Office of a Mayor there and Shall Execute the same till another be chosen as aforesaid AND In Case of the Disability of such eldest Alderman Then y^e^ next in Seniority Shall Take vpon him the said Office of Mayor to Exercise the same as aforesaid

AND In Case the Recorder or any of the Aldermen or Comon-Councill men of or belonging to the s^d^. City for the time being Shall Misbehave him or themselves in their respective Offices and Places They Shall be Removed and others Chosen in their Stead in mañer following That is to Say THE RECORDER for the time being may be removed for Misbehaviour by the Mayor and Two Thirds of the Aldermen and Comon-Council men respectively AND In Case of Such Removall Or of the Death of the Recorder Then to Choose another fitt Pson Skill'd in Law to be Recorder there And so Continue during Pleasure as aforesaid AND the Alderman so Misbehaving himself may be Removed by the Mayor Recorder and Major Pt of the Aldermen and Comon Council men AND In Case of Such Removall or Death Then within ffour Days after to Choose a fitt Pson or Psons to Supply Such Vacancies[53]

AND if any Comon Councill man Sheriff Coroner Town-Clerk or Clerk of the Peace Clerk of the said Courts or Clerk of the Market for the time being Shall Misbehave him or themselves by Neglect or otherwise in the Execution of their or any of their respective Place or Places Then and in any Such Case It Shall and may be lawfull to and for the Mayor Recorder and Major pt of the Aldermen and Comon-Councillmen of the said City for the time being by Vertue of these p^r^sents to Remove him or them from his or their Place or Places for Such his or their Misbehaviour or Neglect therein AND In Case of the Removall or Death of any Pson or Psons in Such Office or Offices as aforesaid In Convenient time to Choose other fitt Pson or Psons to be in the Place or Places of him or them so dead or Removed[54]

AND I Do for me my Heirs and Successors by these presents Grant to the said Mayor and Comonalty and their Successors That if any of the Citizens of the said City Shall be hereafter Nominated Elected and Chosen to the Office of Mayor Aldermen or Comon Councill men as aforesd And having Notice of his or their Election Shall refuse to Vndertake & Execute that Office to which he is so Chosen That then and So often It Shall and may be lawfull to and for the Mayor Recorder Aldermen and Comon Councill men for the time being According to their Discretion to Impose such Moderate ffines Vpon Such Refusers SO as the Mayor's ffine Exceed not fforty pounds The Aldermans ffive and thirty pounds And other Officers proportionably to be Levyed by Distress and Sale by Warrant Vnder the Comon Seal Or by other lawfull Ways to the Vse of the said Corporac̄on

AND In such Cases It shall be lawfull to Choose others to Supply the Defects of Such Refusers in mañer as is above directed for Elections[55]

AND That it Shall and may be lawfull to and for the Mayor and Recorder And one of the Aldermen for the time being from time to time as often as they Shall find Occasion to Sum̄on a Comon Councill of the said City[56]

AND That no Assembly or Meeting of the said Citizens Shall be Deemed and Accounted a Common Councill Vnless the Mayor and Recorder And at least Three of the Aldermen for the time being And Nine of the Comon Couucill Men be present

[53] This is all identical in both, except that an alderman may be removed by the Mayor, Recorder and "nine" of the Aldermen and Councilmen, in the 1701 Charter, and by the "Major Pt" in the 1706 one.

[54] "And the Common-Council Men, Constables, and Clerk of the Market, for Misbehaviour, shall be removed, and others chosen, as is directed in the Case of Aldermen."

[55] The same in both.

[56] The 1701 Charter provides that Council may be summoned by the "Mayor, Recorder, and at least Three Aldermen," whereas the 1706 Charter permits it to be done by the two officials and "one of the Aldermen."

AND also That the said Mayor Recorder Aldermen and Comon-Councill men for the time being from time to time at their Comon Councill Shall have Power to Admitt Such and So many ffreemen into their Corporation and Society as they Shall think fitt

AND to Make and they may Make Ordain Constitute and Establish Such and So many Good and reasonable Laws Ordinances and Constitutions (not repugnant to the Laws of England and of this Government) As to the Greatest Pt of them at Such Comon Councill Assembled (Where the Mayor and Recorder for the time being are to be allways p[r]sent) Shall Seem necessary and Convenient for the Government of the said City

AND the same Laws Ordinances and Constitutions So made to be Put in Vse and Execution accordingly by the Proper Officers of the said City And at their Pleasure to Revoke Alter and Make anew as Occasion Shall require And also to Impose Such Mulcts and Amerciaments vpon the breakers of Such Laws & Ordinances as to them in their Discretion Shall be thought reasonable WHICH Mulcts As also all other ffines and Americiaments to be Sett or Imposed by Vertue of the Powers hereby granted Shall be Levyed as is above directed In Case of ffines To the Vse of the said Corporacon WITHOUT rendring any Account thereof to me my Heirs & Successors With Power to the Comon Councill aforesaid to Mitigate Remitt or Release Such ffines and Mulcts vpon the Submission of the parties

PROVIDED allways That No Pson or Psons here after Shall have right of Electing or being Elected by Vertue of these p[r]sents to any Office or Place Iudiciall or Ministeriall Nor Shall be Admitted freemen of the s[d]. City Vnless they be ffree Denizens of this Province and are of the Age of Twenty one Years or Vpwards and are Inhabitants of the s[d] City And have an Estate of Inheritance or ffreehold therein Or are worth ffifty pounds in Money or other Stock and have been resident in the said City for the Space of Two Years Or Shall Purchase their ffreedom of the Mayor and Comonalty aforesaid

AND I Do further Grant Vnto the said Mayor and Comonalty of the said City of Philadelphia That they and their Successors Shall and may forever hereafter hold and keep within the Said City in every Week of the Year Two Market Days The one vpon the ffourth day of the Week And the other Vpon the Seventh day of the Week In such Place or Places as is Shall or may be appointed for that Purpose by the s[d]. Mayor and Comonalty or their Successors from time to time[57]

AND That no Market Shall henceforth be granted Erected or Permitted by me my Heirs or Assigns Or by our Deputy or Deputies within Seven Miles in Compass of the s[d]. City Exceping the Market at Germantown[58]

And there Shall be Two ffairs there in every Year The one of them to begin on the Sixteenth day of the Third month called May Yearly And so to be held in or about the Market Place And Continue for that Day and Two Days next following AND the other of the said ffairs to be held in the aforesaid Place on the Sixteenth day of the Ninth month Yearly And for Two days next after BUT I Will That the ffirst day of the Week called Sunday Shall not be Accounted on the said Days[59]

AND I Do Give Grant and Confirm by these p[r]sents to the said Mayor and Comonalty of the s[d]. City and their Successors The Office Occupation and Exercise of Packing all Tobacco Skins ffurs Peltry Bread fflower and other Merchandizes to be Packed Barrelled or Tunned within the said City for Exportation AND the Office of Gauging of all Wines Rum Brandy Butter and all other Things and Merchandizes which ought to be Gauged AND also the Office of Keeping the Standard and Comon Ballance and Weights Ordained to Weigh between Merchants and others within the said City TO HAVE HOLD & EXERCISE the said Severall Offices or Occupations And Disposing Ordering Surveying and Correcting the Same Together with the ffees and Profitts lawfully belonging or to belong to the sd respective Offices To the said Mayor and Comonalty and their Successors forever To be Exercised by them their Deputies Officers or Ministers Without any Account to be rendred to me or my Heirs or Assigns AND That the same Mayor and Comonalty and their Successors by themselves or their Deputies or Officers Shall have the Assize and Essay of Bread Wine Beer

[57] The same in both.

[58] No such provision appears in the 1701 Charter.

[59] The same, except that the 1701 Charter makes no Sunday exception.

and Ale And of all other Victualls and Things whatsoever Set to Sale in the said City

AND I Do for me my Heirs and Assigns Erect and Create in and through the said City A Certain Office called COMON CRYER or VENDUE MASTER for the Selling of Houshold Stuff & other Goods Chattles and Things of all Psons Who Shall be willing that the Said Officer Shall make Sale thereof by Publick Claim called Outcry and Sale in Some Comon and open Place or Place [sic] or Places in the said City WHICH said Office I Give and Grant to the said Mayor and Comonalty of Philadelphia and their Successors forever TO HAVE & Exercise the same Office by them or their Deputy Officer or Officer [sic] or Officers being first Admitted thereto by the Mayor and Comonalty for the time being in the Comon Councill of the same City Assembled Or by the Major Pt of them

AND I Do hereby Strictly Charge and Comand That no other Pson or Psons Presume to Sell any Goods Chattles or other Things by Publick Outcry within the said City or Liberties thereof

AND I Do hereby further Ordain and Grant That the said Mayor and Comonalty in the Comon Councill of the s[d] City Do Ascertain and Establish all ffees and Salaries for the Recorders Sheriffs Town-Clerks Coroners Clerks of the said Courts Clerks of the Market and all other Officers & Persons Imployed or to be Imployd in the Service of the Corporacon And to Prohibit and Restrain the said Officers and Persons from Taking or Demanding any more than what Shall be so Established Vnder Such Penalties and fforfietures as the said Comon Councill Shall Think fitt to Ordain and Inflict[60]

AND I Do for me my Heirs and Assigns By Vertue of the King's Letters Patent Make Erect and Constitute the sd City of Philadelphia to be a Port or Harbour for Discharge and vnlading of Goods and Merchandizes out of Shipps Boats and other Vessells And for Landing or Shipping them in or vpon Such or so many Places Keys and Wharfs As by the Mayor Aldermen And Comon Councill of the s[d]. City Shall from time to time be thought most Expedient for the Accomodations and Service of the Officers of y[e] Customs in the management of the Queen's Affairs & Preservation of her Dutys as well as for Conveniency of Trade

AND I Do Ordain and Declare That the said Port or Harbour Shall be Called THE PORT OF PHILADELPHIA And Shall Extend And be Accounted to Extend into All Such Places Creeks and Rivers within this Province And Shall have Somany Wharfs Keys Landing-places & Members belonging thereto for Landing and Shipping of Goods as the said Mayor Aldermen & Comon Councell for the tyme being With the Approbacon of the Chief Officer or Officers of the Queen's Customs Shall from time to to [sic] time Think fitt to appoint[61]

AND FURTHER I do by these p[r]sents for me my Heirs and Assigns Give and Grant to the said Mayor and Comonalty and their Successors all and every the Messuages Houses Ediffices Buildings Courts Yards Gardens Shops Sheads Porches Benches Cellars Doors of Cellars Stalls Stays Pales Posts Iutties and Penthouses Sign-Posts Props of Signs And the Ground and ffoundation of them Shores Water Courses Gutters & Easments with their appurtenances which now are or at any time hereafter Shall be Erected Built Taken Inclosed Obtained Increased Possessed or Enjoyed by the said Mayor and Comonalty and their Successors or any Pson or Psons whatsoever of in vpon or Vnder all or any Void Grounds Wasts Comons Streets Ways and other Comon Places Within the said City And in the sd Rivers or Water of Delaware and Skoolkill At the Ends of the Streets of the sd City Extending to y[e] said Rivers So as Such Buildings or any Pt thereof Obstruct not the Passage now or hereafter Established in and along the said Streets

AND WHEREAS I have Caused to be Layd out in or near the Center of the said City a Square of Ten Acres where I Intended That Meeting-Houses School & Court-Houses with other Buildings for Publick Concerns should be Erected And in Each Quarter of the said City a Square of Eight Acres to be for the like Vses as the Moorffields in London NOW for as much as the p[r]sent Meeting Houses and School house in the said City have been built Vpon Land purchased in Places most Inhabited And a Place has been bought by this Town and County to Erect a Courthouse vpon So that the said Square (Except one lately designed for a Comon Burying Place) Lye vacant and Vseless THEREFORE I will and by these presents for me

[60] These are new in the 1706 Charter.

[61] The same in both.

my Heirs & Assigns Declare and Grant that the said Mayor and Comonalty and their Successors forever may Have Hold and Enjoy All those ffour Severall Pieces of Ground Known by the Name of Squares Scituate Lying and being in the said City the same are Butted Bounded and Described in the Draught or Mapp Called A PORTRAITURE of the City of Philadelphia in the Province of Pensilvania in America by Thomas Holme Surveyor Generall TO the Vse and Intent only That the same Mayor & Comonalty and Citizens and their Successors may Inclose the sd Squares and Keep ffairs and Markets in Such of them as they Shall See meet from time to time And Erect thereon such or so many Meeting houses School houses Alms houses Court Houses Prisons and other Buildings for Publick Concern as They Shall also See meet And also to Take and receive & Have to the Vse of the said City Such reasonable Stallage Tools and Profitts Arising out of the sd ffairs and Marketts And in the mean time vntill Such Publick Buildings are Erected there To have and Enjoy the Profitts of the s[d]. Squares of Ground To y[e] vse and behoof of the said Mayor and Comonalty And Citizens and their Successors forever for the comon & Publick Vses of the said City And to no other Vses whatsoever

AND That it Shall and may be lawfull to and for the said Mayor and Comonalty and their Successors to put themselves by them or their Deputies in full & peacable Possession and Seisin of all and Singular the premises when and as often as they Shall See Good and Expedient[62]

AND I do also Declare and Grant That the Landing Places now and heretofore Vsed at the Penypot House and Blew Anchor Clear of the Land legally Appropriated to Particular Psons As also the Swamp between Budds Buildings and the Society Hill Shall be left open and Comon for the Vse and Service of the said City And in Order to Digg Docks and Make Harbours for Shipps and Vessells in all or any Pt thereof

AND I Do hereby Grant the Herbage and Vesture of all the Vacant Land within the Bounds and Limitts of the said City AND That the said Vacant Land Shall remain as a free Comon for the Vse of the Inhabitants of the said City Vntill the same Shall be built vpon by those to whom it is or Shall be Allotted in right of their Land Purchased of me or my Heirs

PROVIDED allways That Nothing herein Contained Shall Debarr me or my Heirs in time to Come from ffencing in all that Vacant Land that lies between the said Center Square and Skoolkill Which I intend Shall be divided from the Land by me Allotted for Delaware side by a Straight line along the Broad Street from the said Edward Shippen's Land by the said Center Square to Daniel Pegg's Land NOR Shall the ffencing or Taking in any of the Streets happening to be within that Inclosure on Skuylkill Or within any other Inclosure of the Land hereby granted to the s[d]. Mayor and Comonalty for a Comon of Pasture be Deemed or Adjudged to be an Incroachment Where it Shall not Interfere or Stop any of the Streets or necessary Passages leading to any of the Houses built or to be built within the said City Any thing herein Contained to the Contrary Notwithstanding[63]

AND I Do by these p[r]sents further Declare and Grant That the Two Burgesses or Persons by me formerly granted Should from time to time be Elected Representatives of the said City to Serve in Assembly Shall be so Elected and Chosen by Such as are or Shall be Admitted ffreemen of the Same City And by no other Psons whatsoever[64]

AND I Do Grant That this present Charter shall in all Courts be Construed and Taken most favourable and beneficially for the said Corporacon[65]

AND I WILL NOT That the said Mayor and Comonalty and Citizens of the said City or their Successors Shall Incurr the fforfieture or fforjudger of any of the premisses for or by reason of any Nonuser or Abuser of any of the ffranchises Liberties Priviledges and other Things hereby granted or intended to be by these p[r]sents Or by my former Grants or Charter Granted and Confirmed to the Mayor and Comonalty of the said City of Philadelphia[66]

IN WITNESSE whereof I have herevnto Set my Hand and Caused my Great Seal to be Affixed

DATED at Philadelphia the[67]

[62] These are new in the 1706 Charter.

[63] Virtually the same in both, although the phraseology varies somewhat in some sections.

[64] This is new in the 1706 Charter.

[65] The same in both.

[66] This is new in the 1706 Charter.

[67] Of course, the instrument is undated and unsigned.

# THE MANUSCRIPTS OF GIAMBATISTA BECCARIA, CORRESPONDENT OF BENJAMIN FRANKLIN*

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DURING the last few years historians have turned their attention seriously to science, a segment of intellectual activity heretofore generally considered unlikely grist for their mill, and the results have been interesting and fruitful beyond expectation. It was inevitable, therefore, that scholars should stop to re-examine the work of the Scolopian[1] cleric, Giambatista Beccaria (1716–1781), Professor of Experimental Physics at the University of Turin and one of the mightiest paladins of the heroic age of electricity. The presence of a large mass of his papers in the Library of the American Philosophical Society and the fact that he was one of Benjamin Franklin's more conspicuous correspondents immediately commend him as a personage of more than casual interest, even to those not intrinsically concerned with the history of science. The present article, opening with what it is hoped will be a timely re-evocation of Beccaria's name, presents information on the history and importance of his manuscripts, and, in appendix, a list of those known to exist.

Father Beccaria has been strangely neglected. The meager tokens of his erstwhile celebrity—a statue to him in Mondovì, his birthplace, a *liceo* and a square named in his honor in the same city, another square and an avenue similarly christened in Turin—serve only to accentuate more painfully the oblivion into which he has fallen. The rare attempts in the present century to revive his wilted fame[2] have gone quite unnoticed. Yet the gaunt, grouchy old cleric was reputed in his day to be Europe's most accomplished "electrician," even by those to whose memory time has been more kind. Franklin was so impressed by Beccaria's systematic exploitation of his own brilliant but disorganized insights that he did not hesitate to proclaim the latter's first work on electricity, *Dell'elettricismo artificiale e naturale* (Turin, 1753), "one of the best pieces on the subject in any language."[3] No less eloquent a tribute to Beccaria's skill in the new science was the correspondence that sprang up shortly thereafter between the two men and which lasted until the Turinese professor's death in 1781.[4] In Franklin's eyes Beccaria was obviously the main champion of his revolutionary single-fluid theory against the host of its detractors, led by the Frenchman, Nollet. The stout defense and complete substantiation of the theory by Beccaria was unquestionably an essential prelude to the wise principle steadfastly observed by Franklin in later years never to engage in polemics over his ideas, since time would inexorably pass judgment upon them without his interference.[5] Franklin

* The collection of most of the material used in this article was made possible by grants-in-aid from the American Philosophical Society.

[1] The "Scolopi" were the adherents of a charitable teaching order founded at the end of the sixteenth century, so called because they were characterized as *ex scholis piis*, or, in Italian, *delle Scuole Pie*.

[2] Especially, Piacenza, M., Per l'epistolario di G. B. Beccaria, *Bollettino storico-bibliografico subalpino* (Torino) **7**: 144–147, 1902, and Note biografiche e bibliografiche e nuovi documenti su G. B. Beccaria, *ibid.* **9**: 209–228, 340–354, 1904 (both articles were reprinted separately, Pinerolo, Tip. sociale, 1902 and 1904, respectively); Gliozzi, M., Giambatista Beccaria nella storia dell'elettricità, *Archeion* (Roma-Paris) **17**: 15–47, 1935 (and see also his masterly *L'elettrologia fino al Volta* **1**: 209–236, Napoli, Loffredo, 1937).

In addition to the more scholarly contributions of Piacenza and Gliozzi, sporadic efforts have been made in recent years to popularize Beccaria as something of a local celebrity, for example: Gaudino, C., G. B. Beccaria, *Annuario del R. Liceo "G. B. Beccaria" di Mondovì*, 1929–1932, pp. 32–38; Burzio, F., Piemontesi del '700: il padre Beccaria, *La stampa* (Torino), 7 December 1940, and Il padre Beccaria, *Anima e volti del Piemonte*, 79–97, Torino, Edizioni palatine (SATET), 1947; Provenzal, G., G. B. Beccaria (1716–1781), *Profili bio-bibliografici di chimici italiani*, 41–46, Roma, Ist. naz. med. farmacologico "Serono," n. d.

[3] Letter to Dalibard, 29 June 1755, in *The writings of Benjamin Franklin* (ed. A. H. Smyth) **3**: 269, N. Y., Macmillan, 1907. (This edition will hereafter be referred to as "Smyth.")

[4] I am preparing a detailed analysis of this relationship in a forthcoming volume on Franklin and Italy.

[5] A younger and more impetuous Franklin, smarting under what he took as an affront to himself and to Ameri-

doubtless had Beccaria in mind on 29 May 1763 when he wrote complacently to Ezra Stiles: "The dispute you mention between the French and Italian Philosophers still subsists. You will not wonder at my supposing the latter to have greatly the advantage."[6] A number of years later when the pressure of other responsibilities made it impossible for Franklin to pursue his favorite science, he could think of no better way to contribute to its progress than by personally seeing to a translation into English of his Italian colleague's *Dell'elettricismo artificiale* (Turin, 1772), an expansion of the first part of the earlier *Dell'elettricismo artificiale e naturale.*

Franklin's admiration for Beccaria was shared by many others. The European periodical literature of the time is full of praise for the latter's contributions to the infant science. He was not only adulated by fellow scientists and sought after by learned academies,[7] but was courted by nobility, and even royalty, both native and foreign. The enlightened traveler making the fashionable tour of Europe could hardly call his cultural odyssey a success unless he had seen the wonder of Italy at Turin.[8] Father Beccaria's prowess in probing nature's most awful secrets even gave rise to local legends of sorcery which were alive until recent times. In short, it is clear that Joseph Priestley was only voicing the consensus of his unprejudiced contemporaries when he wrote in his monumental *History and present state of electricity:* "All that was done by the French and English electricians, with respect to lightning and electricity, fell far short of what was done by Signior Beccaria at Turin."[9]

One feels a twinge of sadness upon contemplating the eclipse of a man as jealous of his fame as was Beccaria and so little deserving of oblivion. While the total effect of his keen exegesis of Franklinian theory has yet to be weighed, it is clear that his work accounts in large measure for the precocious development of electrical science in Italy and prepared the way for the crowning achievements of Volta. But every scientist, in so far as he is but a link in the plastic chain of human knowledge, is destined to be superseded; and it was Beccaria's misfortune to fall between two creative titans, Franklin and Volta. If we admit with his contemporary and friend, Buffon, that "Le style c'est l'homme même," the *sine qua non* of Beccaria's survival in the memory of men lay in his manner of expression. It may be, therefore, that his literary mode compromised him with posterity, and that he was vulnerable to the epithet of "Attila of literature" hurled at him by Carlo Barletti, Professor of Physics at the University of Pavia.[10] Barletti, however, was his rival and hardly an impartial critic. Certain it is that Beccaria was not insensible to esthetic matters: he derived immense enjoyment from reading the Italian and Latin classics, wrote very respectable verse in both those languages, and was an active member of the Turinese Academy of Painting and Sculpture. His style is the periodic one so natural to the Italian language and often quaintly baroque in the manner of the eighteenth century; but it is as strongly conscious and personal as his bold calligraphy and, in the opinion of the present writer, at least, always a more than adequate vehicle for his clear and vigorous thought.

We may assume, in any case, that the pedestal which Beccaria so painstakingly erected for himself would have been more secure had more of the results of his multifarious investigations been published. Now that his papers have become accessible to students, his sojourn in the limbo of the near-forgotten may be coming to an end.

The fortune of the manuscripts left by Beccaria upon his death is cloaked in mystery. It was long taken for granted that they were inherited *in toto* by Count Prospero Balbo, one of Beccaria's favorite pupils and a faithful companion in his last illness. Giuseppe Antonio Eandi, dedicating to Balbo his biography of their former teacher, refers to "Father Beccaria, my teacher and yours, who entrusted to your hands

can science, was on the verge of engaging in a trans-Atlantic feud with Nollet when news of Beccaria's work reached him (see *The letters and papers of Cadwallader Colden* **4**: 359, 382, 463–464, N. Y., New York Hist. Soc., 1921).

[6] *Letters and papers of Ezra Stiles* (ed. I. M. Calder), 13, New Haven, Yale University Library, 1933.

[7] It is a curious fact that Beccaria was elected to the London Royal Society on 29 May 1755, almost a year before Franklin, upon whose ideas his celebrity was built (*The record of the Royal Society of London*, 4th ed., 414, 415, London, The Royal Soc., 1940).

[8] Even an occasional American paid his hommage: for example, John Morgan, remembered as director-general of hospitals and physician in chief of the American Revolutionary armies (see Pace, A., Notes on Dr. John Morgan and his relations with Italian men and women of science, *Bull. Hist. Med.* **18**: 452–453, 1946).

[9] 4th ed., 314, London, 1775.

[10] Entry no. 11 in Prospero Balbo's *Adversariorum primum* (see note 18 below).

his manuscripts."[11] Two decades later, when A. M. Vassalli-Eandi, nephew of Beccaria's biographer, composed his uncle's eulogy for the *Mémoires* of the Turinese Academy of Sciences, he alluded to the "*Memorie istoriche* addressed to Count Balbo, inheritor by will of the manuscripts of the restorer of physics in Piedmont."[12] Finally, Prospero Balbo himself, writing Beccaria's life for the Michaud *Biographie universelle*,[13] mentions the unedited works of his old master, with the remark: "Beccaria bequeathed them to the author of this article. One can see the catalogue of them at the end of the *Memorie storiche intorno agli studi del P. Beccaria* by the Abbot Landi [*sic*]."

Doubt was cast upon the reality of the legacy when Beccaria's will was published a century after his death,[14] and in it could be found no mention of Prospero Balbo. What is more, by the terms of a codicil Beccaria left his manuscripts "to the Abbots Canonica and Eandi jointly." An additional element of uncertainty is introduced by Balbo himself at the end of his catalogue of the unedited works of Beccaria appended to Eandi's biography:[15] "The writings which I possess of the most distinguished Father did not all come to me by legacy of the illustrious man now dead: a few I acquired elsewhere, and others were courteously given to me by the Abbot Eandi, Baron Vernazza, and others."

Piacenza, the only one who to date has weighed any of the conflicting evidence,[16] collating Eandi's statement that Beccaria "entrusted" his manuscripts to Balbo with the fact that the latter admitted gathering his collection from various sources, supposed that Beccaria gave a part of his papers to Balbo while still alive, and that it was those that remained which were willed to his other pupils, Eandi and Canonica. Some remarks in a notebook of Prospero Balbo, dated 1781,[17] now furnish conclusive evidence that Piacenza's hypothesis is correct. In entry no. 8, Balbo comments with reference to a number of letters from Beccaria to the Bolognese professor, Giacomo Bartolommeo Beccari: "There was a copy of these among the mss. *when Father Beccaria first gave them to me* [italics are mine]; then he asked for it again along with the papers on lightning, because, having recovered somewhat, he did more work on that subject. B[eccaria] had them when he died." Entry no. 13 presents further confirmation of Piacenza's surmisal:

> All the papers of Father Beccaria were in the most complete disorder and in an almost inextricable confusion, so that I had to employ long labor, much time and extreme diligence to put them in proper order, as I now flatter myself that they are. I carried out this operation hastily when they were first turned over to me and drew up a rough index. But I improved it considerably *now that after his death certain others were given to me in addition to those I had returned to Father Beccaria last fall* . . . [italics mine].

We may then infer that Beccaria, before his death, put a large share, perhaps the bulk, of his manuscripts in Balbo's hands, and that the latter on his own initiative proceeded to acquire as much additional material as he could in preparation for a complete edition of his old master's writings. Scattered, but impressive, evidence remains of his extensive preliminaries for the publication, especially in the two notebooks entitled, the first, *Adversariorum primum P. B. C.* (1781), the other, *Prosperi Balbi adversariorum liber secundus* (1782–1784).[18] The very number of extant drafts of the catalogue of the Beccaria manuscripts in his possession is proof of serious intent: in addition to the first rough inventory just mentioned in the *Adversariorum primum*, there is a catalogue in his own hand in the Biblioteca Reale of Turin,[19] not to mention the final autograph draft with which he provided Eandi for publication in the biography of Bec-

[11] *Memorie istoriche intorno gli studi del padre Giambatista Beccaria*, 3, Torino, Stamparia reale, 1783. (This work will be referred to as "Eandi.")

[12] Notice sur la vie et les ouvrages d'Eandi par A. M. Vassalli-Eandi, *Mémoires de l'Académie des sciences, littérature et beaux-arts de Turin: Sciences physiques et mathématiques* **12**: xxvii, 1802–1803.

[13] **4**: 8–11, Paris, 1811.

[14] Reprinted by Piacenza, *loc. cit.* **9**: 222, note, from Perrero, D., Ancora del padre G. B. Beccaria: cenni biografici inediti, *Il Risorgimento* (Torino), 1881, no. 193.

[15] P. 161.

[16] *Loc. cit.* **9**: 226–227.

[17] The *Adversariorum primum* (see next note).

[18] The first is now in the Biblioteca Apostolica Vaticana; the second is still in the private archives of the Balbo family of Turin.

I take pleasure in acknowledging here the present Count Carlo Balbo's gracious hospitality and kind permission to consult the family papers. My thanks go also to Professor Luigi Berra of the Biblioteca Apostolica Vaticana who allowed me to examine the Beccaria manuscripts in that library, even though they had not yet been catalogued.

[19] Item 47 in Ms. 86, *Memorie di storia patria: Pavesio e Pasini.*

caria.[20] Balbo made every effort to gather everything he could find by and about his old teacher, soliciting and copying letters, purchasing papers owned by others, making note of remarks which Beccaria had jotted on manuscripts that had to be returned to their authors, and even collecting word-of-mouth information from persons who had known him.

Balbo's contemporaries knew of the projected edition and waited impatiently for its appearance. The reviewer of Eandi's biography for the Milanese *Gazzetta letteraria*[21] felt no qualms in predicting that the edition would be "certainly an honor to Italy and useful to physics." Bartolommeo Bianucci, who had, at the University of Pisa, as Beccaria at the University of Turin, battled victoriously against stubborn Cartesians to install Galileian-Newtonian experimental method, wrote a fervent eulogy of his eminent colleague[22] in which he declared the papers left by Beccaria "worthy in the state in which they are to be given to the public."

For some unknown reason Balbo never carried out his intention, and with his failure passed the golden opportunity to make Beccaria known in his entirety. The course of events of the following century rendered insignificant the "philosophic" speculations so dear to the eighteenth. Count Prospero's son, Cesare, turned by preference to history and politics, subjects more consonant with interests aroused by Italy's nascent nationalism, and Beccaria's manuscripts were left to gather dust. As far as is known, their peaceful slumber was disturbed only once in the nineteenth century. George Ticknor, Professor of French, Spanish, and Belles-lettres at Harvard University, records in his diaries that in Turin on the evening of 4 October 1836 he had dinner with his friend, Count Cesare Balbo, in the palace of the latter's aged father, and reports the following episode:

> The old Count did not dine with us, but he came into the saloon in the evening, bringing with him several original letters of Franklin, one or two American pamphlets, and other things he thought would please me, as an American, to see. The letters of Franklin he inherited with the papers of Beccaria,—the professor of philosophy, not the jurist,—whose favorite pupil the Count was, and who corresponded with Franklin about electricity, etc.[23]

Any curious scholar would presumably have found the Beccaria papers in the Balbo archives quite as Prospero left them at any time up to the first decade of the present century. Mario Piacenza, writing in 1904, remarks in a footnote: "Many letters and other papers of Beccaria are in fact in the private archive of Count Cesare Balbo of Vinadio, great-grandson of Count Prospero."[24] Their vicissitudes since that date cannot, however, be traced with any certainty. There is nothing now of Beccaria in the archives of the Balbo family. Meanwhile, at least a part of Prospero Balbo's collection made its appearance elsewhere, for Mario Gliozzi, in his authoritative article on Beccaria published in 1935 in Mieli's *Archeion*, revealed that another opportunity was at hand to freshen the faded memory of Father Beccaria: "Again today some public organization could do what Balbo did not, because the unedited manuscripts of Beccaria passed from the Balbo family into the private library of His Excellency Federico Patetta, member of the Italian Academy."[25] We do not know whether the Beccaria papers which Gliozzi fleetingly declared to be the property of Patetta, the distinguished Piedmontese jurist, historian, and collector, were substantially the total corpus as assembled by Prospero Balbo, or only a part of it. Patetta died in 1945, leaving his manuscripts to the Vatican,[26] and a notice of the Beccaria papers among them will be given below.

The largest and most important group of Beccaria manuscripts somehow found its way across the Atlantic into the Library of the American Philosophical Society. These documents, itemized in Appendix A of the present article, are disposed in eighteen lots, most of them loosely in folders, a few sewed in bound or unbound fascicles. A former owner classified the manuscripts, not always correctly, into sixty-four more or less

[20] Part of item no. 16 in the Beccaria papers in the Library of the American Philosophical Society (see catalogue below).

[21] *Parte letteraria* **4**: 142–143, 1783.

[22] Elogio del p. Giovan Batista Beccaria delle Scuole Pie, *Giornale de' letterati di Pisa* **50**: 3–45, 1783. The author of this anonymous biography is identified by a contemporary manuscript note at the end of the copy of A. Tana's *Elogio del padre Beccaria pronunciato il giorno VIII novembre dell'anno MDCCLXXXI nella Real Accademia di pittura e scultura di Torino* (Torino, Briolo, 1781) in the Turinese Accademia della scienze.

[23] *Life, letters and journals of George Ticknor* (ed. G. S. Hillard, and others), 8th ed., **2**: 41–42, Boston, Osgood, 1877.

[24] *Loc. cit.* **9**: 227.

[25] **17**: 15.

[26] See the commemorative note by L. Bulferetti, *Giornale storico della letteratura italiana* **125**: 128–130, 1948.

identifiable units. Most of them are autographs, ranging from scientific journals, drafts of letters in varying states of coherence and completion, and fragments often impossible to interpret satisfactorily, to studies ready for the printer. The manuscript of Eandi's *Memorie istoriche* is a welcome accretion for which Prospero Balbo is probably responsible. Interspersed among the Beccaria papers are notes of Balbo relative to the collection. The importance of certain items is at once apparent, while others will call for careful analysis and evaluation. A few comments on some of the more conspicuous pieces are in order at this time.

The first lot is of particular interest to Americans, because, with the exception of item no. 2, it consists of drafts of letters written to Franklin. With the emergence of this correspondence, a quite unexpected event in view of Balbo's testimony that his old master rarely kept copies of his letters,[27] it becomes possible to reconstruct almost entirely the important exchange with Franklin. Balbo's happy inspiration to attach the translations of six letters of Franklin as a "noble ornament" to Eandi's biography of Beccaria had already ensured the preservation of what was doubtless the corpus of the letters sent by Franklin to Beccaria.[28] Yet, evident gaps remained which could be filled only with correspondence from Franklin's Italian friend. Heretofore one could only contemplate the lacunae in gloomy despair, with visions of irresponsible soldiers rifling the box of early private papers left by Franklin with Mrs. Joseph Galloway when he went to France in 1776, or pitiless tailor's scissors at work among the bundle found in St. James' Street in London where William Temple Franklin had lived, to say nothing of the barrel of precious documents on its last journey from a garret over a stable on the Fox homestead in Pennsylvania to the local paper mill in answer to a housewife's desire to have a new rug for the kitchen floor. But at long last the traffic of ideas and material between Franklin and Beccaria lies open before us. We follow their exchange of publications and ideas on such topics as electricity, phosphorescence, meteorology, and the aurora borealis. We see Franklin clearly in the role of mediator between Beccaria and the London Royal Society, with its widely diffused *Transactions*. Beccaria's explanation to Franklin that the presence of jealous and malevolent spies forced him to put into print at once the results of his investigations accounts for the puzzling fact that a number of such writings appeared in the *Transactions* after passing through Franklin's hands in printed form. One can now fully appreciate Beccaria's loyal effort to defend Franklin's theory of electricity against the formidable threat of Symmer's double-fluid system. There is valuable complementary information on the exchange between Franklin and Beccaria in connection with the English translation of the latter's *Elettricismo artificiale*. The correspondence is not lacking even in "human interest." Franklin's friendly inquiry into Beccaria's health and scientific activity in the letter of 19 November 1779 at a time when the fame-hungry cleric must have realized that he had not much longer to live, raised him to a paroxysm of joy. The exuberant multiple drafts of Beccaria's letter of 16 November of that year are truly touching. Obviously his answer, with the description of recent published and unpublished works, assumed in Beccaria's mind the proportions of an intellectual testament, of which the great American would be the executor. In the drafts Beccaria could not resist indulging in digressions in which he fancied himself in intimate conversation with the "most human Franklin." These effusions were, however, scrupulously expunged from the letter actually sent to Franklin.

Item no. 2 consists of a few scattered notes by Balbo taken, to judge from the heading, "Scarna-

[27] Eandi, 145.

[28] Eandi, 146–152.

To these six letters, perhaps last seen together by Ticknor in 1836, must be added, of course, the famous "armonica" letter of 13 July 1762 (Smyth **4**: 163–169).

In addition to that of the "armonica" letter, the original English texts of several other letters sent by Franklin to Beccaria have survived. The American Philosophical Society owns a draft of most of the letter of 20 March 1774 (Smyth **6**: 220–221; dated 25 March in Eandi). Copies of the original text of the letter of 19 November 1779, as well as a draft of the one of 19 February 1781, can be found among the Franklin papers in the Library of Congress (Ford, W. C., *List of the Benjamin Franklin papers in the Library of Congress*, 73, 90, Washington, Gov. Print. Off., 1905; published in Smyth **7**: 417–418 and **8**: 211). Moreover, the Yale University Library now has what seems to be the letter of 19 November 1779 actually received by Beccaria.

I am indebted to Miss Dorothy W. Bridgwater, Assistant Librarian of the Yale University Library, for certain details regarding the last mentioned letter. It bears, for example, the figure "100" in the upper right-hand corner; which may mean that, if it once belonged to the Balbos, it may have been part of the large classified autograph collection someone once assembled from the family archives, and which now has many lacunae.

figi letters," on correspondence between Beccaria and the Turinese ambassador to France. It is of some interest for the following remarks: "Request of Father Beccaria to Mr. Franklin through Count Scarnafigi to be enrolled in the Society of Pennsylvania . . . in 1773. He wrote assuring that he would receive the diploma in June of '84 [error for '74?]. Letter 29 October 1773." Whence it would appear that Beccaria, who to the end of his days scorned his native Turinese Academy of Sciences, sought membership in the American Philosophical Society through Franklin, and that it was promised him.[29]

Of all the papers in the collection, the most valuable scientifically are doubtless the sixteen letters of lot IV. We have seen that they are the last compositions upon which Beccaria worked, and that, in a desperate attempt to cheat death, he recalled them from Balbo to whom he had already donated them.[30] From the opening words of the first letter and its division into numbered paragraphs following consecutively upon his previous masterpieces, the *Elettricismo artificiale* (1–993) and the *Elettricità a cielo sereno* (994–1163), it is clear that Beccaria planned these studies as a continuation of the two earlier works, presumably under the title, *Dell'elettricità del cielo fulminante.* The genesis of this cluster of letters is traced by Prospero Balbo in an exchange he had in 1783 with the Milanese physicist, Marsilio Landriani, which can be found entire in the Biblioteca Reale of Turin under the title, "Esposizione de' veri sentimenti del padre Beccaria sopra la maniera di riparare gli edifizi dal fulmine."[31] Landriani, who had been commissioned by the Austrian government to erect lightning rods on the public buildings of Lombardy and to prepare a memoir to instruct the people upon the utility of this invention, wrote to inquire about the truth of a rumor that toward the end of his life Beccaria had composed a work attacking rods as ineffective and dangerous. Only the most important letter in this correspondence, that of Balbo's dated 10 September 1783, was published, posthumously, as "De' parafulmini: lettera al cavaliere Marsilio Landriani."[32] In it Balbo shows in a clear, if incidental, way that the sixteen letters entitled *Del fulmine* were the culmination of long years of thought and experimentation. Since his discussion brings out the relationship between these letters and a number of earlier writings, some preserved, others lost, it is expedient to reprint the few pertinent paragraphs in the second appendix to the present article. The rarity of the little edition of Balbo's works in which his letter to Landriani appears makes republication of this passage all the more desirable.

Of the remaining documents owned by the American Philosophical Society, perhaps the most impressive are the nine letters of lot XVII on the mechanical effects of electricity addressed by Beccaria to his colleague at the University of Turin, Gian Francesco Cigna. As in the case of the letters *Del fulmine*, these studies are a sequel to material already printed, and being in a form ready for the press, should be published.

The intrinsic and relative value of many other papers on electricity, meteorology, the aurora borealis, seismology, etc., as has been observed above, can be established only after close study. In numerous instances, however, the obstacles to interpretation and evaluation may prove insuperable, for the peregrinations of the Beccaria papers have not lessened the disorder that wrung moans of despair from Prospero Balbo.

The manuscript of Eandi's *Memorie istoriche*, while it could not have been a part of the original Beccaria papers, also deserves attention. It is the work of various hands. Their identification and a collation of the manuscript with the printed work would probably yield results of some interest.

To the Beccaria documents available in the Library of the American Philosophical Society, one can now add those recently deposited in the Biblioteca Apostolica Vaticana by terms of the will of Federico Patetta. A preliminary inventory made by their custodian, Professor Luigi Berra, revealed the items listed in Appendix C.

In the final tally, the ravages of time have not been as severe as one might have feared. Assuming, as we safely can, that Prospero Balbo's

[29] There is no evidence, however, that his name ever came up for election. This oversight may be considered amended in the light of the number of Turinese accepted into the American Philosophical Society during the first part of the following century, among them Prospero Balbo (see Pace, A., The American Philosophical Society and Italy, *Proc. Amer. Philos. Soc.* **90**: 400, 1946).

[30] See the first of the two passages from Balbo's *Adversariorum primum* referred to in note 17 above.

[31] Item no. 16 in Ms. 114.

[32] In his *Opere varie* (ed. L. Cibrario) 1: 242–258, Torino, Pic, 1830, where it appears under the date 20 September. Only the first volume of the *Opere* was published.

catalogue as published in Eandi's *Memorie istoriche* was practically a complete record of Beccaria's manuscripts, we can congratulate ourselves that by far the greater, and certainly the more important, part of them has survived. Comparing with Balbo's list, it is to be noted that nearly all the missing documents seem to fall into a bloc beginning with "*Della maniera di preservare dal fulmine il magazzino a polvere di S. Ignazio del forte di Demonte . . .*" up to and including the "*Volgarizzamento dall'inglese delle* osservazioni *di Franklin* intorno all'accrescimento degli uomini, ed alla popolazione de'paesi." This fact suggests that they have suffered a common fate, and that if they have not perished together, they may some day reappear in a body.[33]

It is a little disappointing that the lost bloc of manuscripts could not have ended short of Beccaria's translation of the famous essay, *Observations concerning the increase of mankind, peopling of countries, etc.*, in which Franklin, half a century before Malthus, perceived the connection between population growth and the means of sustenance. Balbo noted in his *Adversariorum liber secundus* that the autograph translation was given to him by Baron Giuseppe Vernazza in 1782, who told him that Beccaria had done it as an exercise when he was beginning to learn the English language. Balbo also remarked upon the necessity of comparing the manuscript with the original text and the French translation if it were to be included in his projected edition—and foresaw trouble with the censor.[34]

As things now stand, perhaps the most regrettable loss is the correspondence, characterized by Balbo as a "numerous collection . . . of most precious letters written to Father Beccaria by the greatest men that our century and Europe can boast. . . ."[35] Fortunately the loss has not been an absolute one. We have seen that a lucky play of circumstances saved most of the Franklin correspondence. Moreover, the American Philosophical Society has recently acquired a number of letters sent to Beccaria by the Swiss scientist, Horace Bénédict de Saussure. Since these letters were almost surely once a part of the Beccaria papers owned by Prospero Balbo, hope arises that more such correspondence will eventually turn up.

The conclusion to be drawn is, that after a precarious existence of nearly a century and three-quarters, the bulk of the manuscripts of one of the major scientists of the eighteenth century has come to rest in safe and accessible depositories. Study and publication of these documents will throw much light upon the scientific ferment of western civilization at one of its most cosmopolitan moments. Americans have a particular interest in them because the intimate relationship between Franklin and Beccaria affords an excellent opportunity to add to what is known about the activity and influence of their great compatriot. Those who take pleasure in seeing justice done will admit that destiny has amply punished Father Beccaria for his immoderate greed for glory—a passion so compelling that he would willingly share his fame only with Franklin—and rejoice that the opportunity is at hand to restore to him his due.[36]

## APPENDIX A

### CATALOGUE OF BECCARIA MANUSCRIPTS IN THE LIBRARY OF THE AMERICAN PHILOSOPHICAL SOCIETY[37]

I. 1–14. Letters from Beccaria to Franklin.

1, 3–8. Drafts of Beccaria's response to Franklin's letter from Passy, 19 November 1779.[38]

Nos. 1, 3, 7 are holographs, no. 4 bears a title and corrections in Beccaria's hand, no. 8 is signed by Beccaria. Nos. 5 and 6 are in other hands.

2. "Scarnafigi lettere."

A page of notes in the hand of Prospero Balbo, taken apparently from correspondence between Beccaria and Count Ponte di Scarnafigi, Turinese ambassador to France.

9–11. Undated autograph drafts of Beccaria's answer to Franklin's letter of 11 August 1773.[39]

12. Undated autograph draft of a letter answering letters of Franklin now apparently lost.

Beccaria discusses the phenomenon of phosphorescence, inquires whether Pringle has received a copy of his *Dell'elettricità terrestre atmosferica a cielo sereno*, and makes corrections for the English translation of his *Elettricismo artificiale*.

[33] The preservation of the exchange with Felice Fontana is apparently due to its incorporation into another composition.

[34] "Ma forse incontrerebbe difficoltà nella revisione."

[35] Eandi, 145.

[36] It is my intention to see personally to the publication of at least a part of the Beccaria papers in the Library of the American Philosophical Society.

[37] The Roman numerals refer to the manuscript lots and the Arabic numerals to the constituent items.

[38] Beccaria's answer as received by Franklin is the letter of 16 December 1779 among the Franklin papers in the Library of the American Philosophical Society (see Hays, I. Minis, *Calendar of the papers of Benjamin Franklin* 2: 181, Amer. Philos. Soc., 1906).

[39] Eandi, 149–150, Smyth 6: 112.

13–14. Drafts of a letter dated Turin, 11 October 1766, in answer to Franklin's letter from London, 29 May 1766.[40]

II. 15. An unpaginated, paper-bound volume of notes, obviously the work registered by Balbo as *Giornale d'osservazioni meteorologiche, e principalmente d'elettricità atmosferica fatte in Garzegna negli anni 1769 1770 1772 1773 1775 1776, e in Superga in 1780.*[41]

III. 16. The manuscript of Eandi's *Memorie istoriche intorno gli studi del padre Giambatista Beccaria.*

IV. 17. "Di due sensazioni di odore, e di luce che lascia dietro a sè il fulmine." Autograph.

18. Notes of Prospero Balbo relative to his projected edition of items 17 and 20.

19. Balbo's index to items 17 and 20.

20. *Del fulmine.* The first fifteen letters listed by Balbo in Eandi, 159–160.[42] Autographs.

"Al chiarissimo sig. Giuseppe Banks presidente della Società Reale di Londra: lettera di G. B. Beccaria delle S. P. nella quale si tratta di osservare la elettricità terrestre atmosferica."

Dated Turin, 15 July 1780. The letter exists in one complete draft and part of a clean copy.

"Al medesimo: lettera seconda della cagione del fulmine."

Dated Turin, 16 August 1780.

"Lettera III. Al chiarissimo signor conte Gregorio Casali Bentivoglio Paleotta senatore accademico, e professore di Bologna: della cagione esterna, che riunisce, e condensa in fulmine il fuoco elettrico."

"Lettera IV. Al preclarissimo sig. Giuseppe Banks presidente della Società Reale di Londra: osservazioni intorno all'elettricità permanente ne' temporali semplici, e intorno alle alterazioni passeggiere della medesima."

"Lettera V. A monsignore Michele Casati vescovo di Mondovì, dotto, pio, zelante, caritatevole e per ogni modo benemerito della fortunata diocesi sua: della naturalezza della cagione efficiente de' temporali, e degli accidenti compagni."[43]

"Lettera VI. Al celebratissimo sig. dottore Giuseppe Priestley membro della Società Reale di Londra: delle trombe, o code di mare."

"Lettera VII. Al medesimo . . .: della folgore, o sia del fulmine, che attraversa l'aria."

"Lettera VIII. Al medesimo: del diffondersi il fulmine in terra."

"Lettera IX. Al medesimo: di tre diverse maniere di luci che possono succedere allo scoppio de' fulmini."

"Lettera X. Al medesimo: dell'inducimento in sentiero, che adopera il fulmine propagandosi pei corpi terrestri."

"Lettera XI. Al medesimo: di alcuni ammirandi effetti prodotti dal fulmine collo scagliamento de' licori non infiammabili."

"Lettera XII. Al medesimo: delle cagioni, onde il fulmine trallo scagliare le parti de' corpi ne accende alcuni, e non altri."

"Lettera XIII. Al medesimo. Degli effetti del fulmine sui metalli."

"Lettera XIV. Al sig$^{r}$ Giuseppe Priestley sperimentatore di parecchi nuovi rami di verità per l'avanti occulte intorno all'azione del fuoco elettrico sulle calci metalliche."[44]

"Lettera XV. Al medesimo: degli efetti [*sic*] del fulmine sopra i sassi, sopra i mattoni, sopra le terre, sopra le calci &c."

Item 17 above is out of order: its place is sixteenth in this series of letters *Del fulmine*, as Balbo indicates in his classification. It contains the title of what was to have been the next study: "Lettera al medesimo: dell'azione del fuoco elettrico sui vegetabili e sugli animali."

V. 21. Untitled draft of observations on the aurora borealis. Autograph only in part.

VI. 22. "Delle aurore boreali: copia I. Al preclarissimo sig$^{r}$ abbate Tomaso Valperga di Caluso."

Only the corrections are in Beccaria's calligraphy.

VII. 23. Various notes on the aurora borealis. The first section bears the title, "Del lume zodiacale."

These notes may have been part of the bundle of forty-eight pages on the topic of "lume zodiacale"[45] about which Prospero remarks in his *Adversariorum primum*[46]: "I despair of being able to put them in order because they are incomplete."

VIII. 24–27. These items taken together probably make up what Balbo catalogued as *Giornale d'osservazioni de' tremuoti, e dell'elettricità atmosferica in Alba 1771.*[47]

24. "1771. Tremuoto di Alba: giornale scritto dal Vernazza a dettatura del Beccaria cui fu compagno di viaggio."

25. "1771. Tremuoto di Alba." Autograph.

26. "Risultati delle osservazioni particolari." Autograph.

27. "Osservazioni generali intorno al tremuoto d'Alba principiato i 28 genaio [*sic*] 1771." Autograph.

IX. 28. "Delle macchie solari." Autograph.

X. 29. A fragment dealing with "zodiacal light," of which only part of the first page and some corrections are in Beccaria's hand.

XI. 30–35. A miscellany of notes and studies, apparently among those alluded to by Balbo in Eandi, 161, on methods of protecting buildings, and especially powder magazines, from lightning.

30. A half page of odd notes, not in Beccaria's hand, on the powder magazine of Santa Barbara.

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[40] Eandi, 146–148, Smyth **4**: 457–459.

[41] Eandi, 161.

[42] Because of their importance they are listed again here with more complete titles than in Balbo's inventory.

[43] This letter was published by Beccaria shortly before his death as an occasional piece, with the addition of an appropriate introduction and some slight changes in the text: *Al signor conte Cotti di Brusasco per la laurea in ambe leggi applaudendo il p. G. B. Beccaria pubblica una sua lettera, nella quale si trova d'avere soddisfatto ad un'antica quistione del signor conte medesimo intorno alla naturalezza della cagione efficiente de' temporali, e de' fenomeni compagni*, Torino, Briolo, n. d. (but April of 1781, according to Balbo: see Eandi, 160.)

[44] Published as Lettera del p. Gio: Batista Beccaria p. p. di fisica sperimentale ec. al sig. Giuseppe Priestley sperimentatore di parecchi nuovi rami di verità per l'avanti occulte, *Opuscoli scelti sulle scienze e sulle arti* (Milano) **3**: 377–382, 1780 (*cf.* Eandi, 160).

[45] *Cf.* also item 29 below, and Eandi, 161.

[46] Entry no. 22.

[47] Eandi, 161.

31. Balbo's list of Beccaria's unedited works dealing with the application of lightning rods—eight titles, of which the following pieces remain (items 32–35):[48]

32. "*Calcolo della spesa etc.* [che si fa necessaria per formazione de' travaglj progettati eseguirsi nella costruzione del piantone, canali, e cañoni di lata (*sic*), e spranghe di ferro,] *per assicurare da' fulmini li tre magazzini a polvere esistenti nel maschio del Castello di Tortona. Sottoscritto G. B. Gianotti. Alessandria addì 28 marzo 1770,* con figure. Not autograph.

There is also a non-itemized fragment, part of what is described by Balbo as "*Notizie date da un officiale del soldo. Notizie date da un officiale d'artiglieria che è stato sui vascelli:* titoli scritti di mano del Canova. Due fogli. Risguardano la Santa Barbara, o magazzini delle navi. Il secondo è francese."

It is the second document, in French, that remains. Not autograph.

33. Three fascicles sewed together and labeled "Apparecchi e proposizioni e fulmini." Described by Balbo as follows: "Tre quaderni cuciti insieme, scritti di mano del Beccaria. *Capo I, in cui si espone quanto finora si è scritto intorno al riparare gli edifici, e massime i magazzini di polvere dal fumine.* Contiene una lettera di N. N. (ed è di Felice Fontana) al Beccaria 31 marzo 1770, e la risposta del Beccaria 6 aprile. *Capo II Osservazioni degli effetti di diversi fulmini con le illazioni che si debbono trarre dalle osservazioni medesime.* Lavoro non compito."[49]

34. "*A Sua Eccellenza il signor conte Ponte di Scarnafigi etc.* [ambasciatore di S. M. il Re di Sardegna appresso al Re Cristianissimo]. Intorno ai conduttori, ed a' cervi volanti proposti per dissipare i temporali. Lavoro non compito." Autograph.

35. "*Al chiarissimo signor abate Giuseppe Toaldo* [professore (*sic*) di astronomia, di geografia, e di meteorologia nell'università di Padova]: lettere due sui conduttori, di mano del Vassalli. Lavoro non compito."

In two copies.

XII. 36. "Dell'elettricismo naturale." Autograph.

Paragraphs 994–1071 of a discarded continuation of the *Elettricismo artificiale.* Beccaria later cast the sequel in epistolary form, changing the subject to the more restrictive *Dell'elettricità terrestre a cielo sereno.*[50]

XIII. 37–39. A group of studies dealing principally with the aurora borealis.[51]

37. "Considerazioni del chiarissimo padre Beccaria sopra l'aurora boreale del 1770." Autograph.

38. "Alla chiarissima sig.ra Laura Bassi Verati nata Bassi lettrice pubblica di fisica sperimentale nell'università di Bologna: osservazioni di tre aurore boreali." Autograph draft.

39. Miscellaneous documents on the aurora borealis:
*a*) A fragmentary draft of a letter in French to Laura Bassi. Autograph.
*b*) "Alla medesima: intorno all'accordo delle proprietà del fuoco elettrico, e de' fenomeni, che si osservano nelle aurore boreali." Autograph.
*c*) "Alla medesima: nelle fonzioni proprie del fuoco elettrico, che si osservano nelle aurore boreali." Three autograph drafts.
*d*) Fragmentary drafts of two other letters addressed apparently to the same Laura Bassi, with some illustrations.

XIV–XV. 40–58. Drafts and notes almost entirely in the hand of Beccaria and nearly all preliminary to item 61 below.

XVI. 59–60. Two copies, both in the hand of an ammanuensis, of the title, dedication and index of a projected work, *Delle meteore di luce tranquilla: lettere di Gianbatista Beccaria delle Scuole Pie professore di fisica sperimentale nella Regia Università di Torino, dedicate a Sua Altezza Reale la principessa di Piemonte.*

The prospectus lists the titles of eight letters, the first six addressed to Joseph Banks, the seventh to Joseph Priestley, the last to Gian Francesco Cigna, Professor of Anatomy at the University of Turin. Prospero Balbo's comments in the *Adversariorum primum*[52] prove that this work hardly went beyond the dedication and prospectus. Beccaria must, however, have done some work on the last letter, entitled "Del ventipiovolo torinese," since it is listed in Balbo's published catalogue.[53]

XVII. 61. Nine autograph letters addressed to Gian Francesco Cigna.

These letters, along with items 40–58 above, constitute in all likelihood the material described by Prospero Balbo[54] as "*Molte carte sulla forza espansiva del fuoco elettrico; la teoria de' corpi isolanti; l'elettricità vindice, l'adesione elettrica, ed altre affini materie, che doveano venire in seguito alle due lettere dirette al sig. dottor Cigna pubblicate in Torino col titolo* = Nuovi sperimenti di Giambattista Beccaria delle S. P. per confermare ed estendere la meccanica del fuoco elettrico 1780 *nella reale stamparia in 4°, ed in Milano nel tomo 3 degli opuscoli scelti, pag. 145.*"[55]

XVIII. 62–64. Miscellaneous leaves.
*a*) The beginning of a treatise, in Latin, on tornadoes. Autograph.
*b*) Loose pages of notes, chiefly on the aurora borealis, nearly all in the hand of an ammanuensis.

## APPENDIX B

### EXTRACT FROM PROSPERO BALBO'S OPERE VARIE[56]

Io credo che niun altro fuori del grande Franklin, immortal creatore della scienza elettrica, avesse particolarmente ragionato della maniera di preservare gli edifizi dal fulmine, quando nel

[48] I cite Balbo's titles as given in item 31, with some amplifications.

[49] *Cf.* Eandi, 160.

[50] Published in Turin, 1775.

[51] *Cf.* Eandi, 161.

[52] Entry no. 14.

[53] Eandi, 160.

[54] Eandi, 161.

[55] Franklin was acquainted with the two published letters to Cigna (dated 19 and 20 January 1779) which serve as prelude to the present nine unedited ones: no. 15 in vol. 1106 of pamphlets in the Library of the American Philosophical Society is the separate publication of the two initial letters once owned by Franklin. They were probably sent to him by Beccaria himself.

[56] *I*: 248–250; *cf.* note 32 above.

1758 il padre Beccaria ne trattò diligentemente nelle sue lettere al Beccari. . . .[57]

Dal 1758 sino al 1770 io credo che il padre Beccaria non abbia più scritto altro sopra questo argomento. Ma nel 1770 dovette in esso particolarmente occuparsi. Ho di quell'anno una sua lettera del 24 di marzo, nella quale espone il risultare delle conferenze tenute intorno al miglior modo di riparare dal fulmine il magazzino a polvere di Sant'Ignazio del forte di Demonte [Listed in item 31 above, and in Eandi, 160, but now apparently lost]. Ho pure trovato fra le sue carte un calcolo assai ragionato, formato da un perito li 28 dello stesso mese, della spesa necessaria per armare le tre polveriere esistenti nel maschio di Tortona [item 32 above]. Da certi fogli di notizie relative alla Santabarbara de' vascelli [see items 30 and 32], ho fondamento a credere, che anche sopra questo punto si trattò in quel tempo, ma senza che ne abbia scritto, ch'io sappia, il padre Beccaria. A' 6 d'aprile rispose a posta corrente, epperciò non molto a lungo, all'abate Felice Fontana che avealo interrogato sopra questo istesso argomento dei magazzini da polvere [see item 33, and *cf.* Eandi, 160], e poco dopo consegnò un'*istruzione* alquanto più ampia al conte Carburi che gliela avea richiesta per lo stesso fine, il quale scritto non ho potuto rinvenire. Recatosi quindi a Milano per conferire sulla miglior maniera di preservare quel duomo, ne scrisse costì l'*istruzione* in data del 21 d'ottobre [listed in item 31 above, and in Eandi, 160]. Aveva allora in animo di comporre un trattatello sull'uso de' conduttori, ma l'anno dopo cominciò un'opera più vasta di cui non ho che due capi. Il primo espone *quanto sino allora era stato scritto intorno al riparare gli edifizi, e massime i magazzini della polvere del fulmine.* Il secondo, che non è terminato, comprende *quattordici osservazioni degli effetti di diversi fulmini, colle illazioni che si debbono trarre dalle osservazioni medesime*, e queste illazioni sono per lo più relative alla pratica de' conduttori: ma quest'opera rimase così imperfetta [these two chapters constitute item 33 above].

Del 29 luglio nel 1773 si trova una lettera sopra la maniera di preservare la torre della lanterna di Villafranca; ed è da notarsi che in una casamatta di essa torre si serba la polvere [listed in item 31, and in Eandi, 160]. Nel 1777 il celebre fulmine, che colpì il conduttore della torre della piazza di Siena, ricondusse il nostro Autore a questo genere di specolazioni; e nelle sue memorie si hanno varii abbozzi e squarci di lettere per quell'occasione, nelle quali assai ampiamente destinava di trattare le quistioni più analoghe alla razzaja prodotta da quel fulmine, ch'ei chiama eloquentissimo [Eandi, 161]. Alli 10 del 1779, in una lettera di risposta all'abate Toaldo, tocca qualche particolarità appartenente al nostro oggetto, e di questa lettera tenne copia ch'io conservo. Venuto in quell'anno a Torino il signor Toaldo medesimo, anche di questo punto ebbero insieme qualche dotta conferenza, ed alcuni mesi dopo il padre Beccaria incominciò di nuovo a stendere i suoi pensieri in forma di lettere allo stesso dirette. Di queste tengo la prima, ed un abbozzo di parte della seconda [item 35 above]. Ma cangiato consiglio, prese poi ferma deliberazione di riordinare in un sol corpo di trattato tutto ciò che doveva dire dell'elettricità fulminante; e frutto di questo lavoro, sono sedici lettere, di cui può Ella vedere i titoli nel catalogo da me pubblicato delle opere inedite di quell'illustre defunto. In esse non tratta, è vero, direttamente de' conduttori, ma dalla sua teoria è pur facil cosa ricavarne le conseguenze di pratica. Pare che queste dovessero venire in seguito ad una lettera al conte di Scarnafiggi, di cui si trova abbozzato qualche articolo [item 34?].

[57] *Dell'elettricismo: lettere di G. B. Beccaria membro della Società Reale di Londra, e dell'Accademia delle scienze di Bologna ec. dirette al chiarissimo signor Giacomo Bartolommeo Beccari preside perpetuo, e professore di chimica nell'Instituto di Bologna coll'appendice di un nuovo fosforo descritto all'illustrissimo signor conte Ponte di Scarnafigi*, Bologna, 1758.

## APPENDIX C

### BECCARIA MANUSCRIPTS IN THE BIBLIOTECA APOSTOLICA VATICANA

1. Nine volumes of *Giornali di memorie* for the years 1766–1780.

These must be what Balbo lists as "*Vari giornali di memorie dal 1767 in poi: le sperienze, e le considerazioni in essi contenute risguardano pressochè tutte* [sic] *la scienza elettrica.*[58]

2. "Osservazioni di elettricità fatte col suo intervento al Valentino, dall'11 maggio al 22 settembre 1757."[59]

[58] Eandi, 161.

[59] The illustrative engraving was stuck from a copper plate at present in the possession of the Turinese book-dealer Bourlot, who owns a number of other similar plates.

3. Three copies of *Institutiones*,[60] the substance, apparently, of courses taught by Beccaria.

[60] Balbo notes in his *Adversariorum primum* (entry no. 7): "Nei MS. del P. Beccaria non eravi alcuna Fisica ma solo l'Istituzione de Igne nemmeno finita onde volli provvedermene e di varii tempi perchè sovente fu molto variata . . ." One of the two copies entitled *Institutiones philosophicae in physicam* bears the comment: "P. Balbo comprò in agosto 1782 dal Briolo." Elsewhere in the *Adversariorum primum* we find the note: "Ho comprato a un banchino una fisica in quinterni ma male scritta e in alcuni luoghi mancante. Porta la data 71–72. . . ."

There is some variation in the title: two are labeled *Institutiones philosophicae in physicam;* the third, *Experim. phisicae institutiones traditae ab. admod. R. P. Beccaria scol. p. in regia Taurinensi Academia Tosco Franciscus Anton. scribebat anno r. b. g. MDCCLXXII.*

It is appropriate to mention here two other texts that exist: an *Institutiones in physicam experimentalem* in the Biblioteca Nazionale of Turin (see Mazzatinti, A., A. Sorbelli, et alii, *Inventari dei manoscritti delle biblioteche d'Italia* **28**: 158, Firenze, Oslchki, 1922); and a *Physicae institutiones* in the Turinese Accademia delle scienze.

# THE ASTRONOMICAL MANUSCRIPTS WHICH CHARLES MASON GAVE TO PROVOST THE REVEREND JOHN EWING DURING OCTOBER 1786 [1]

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CHARLES MASON who, jointly with Jeremiah Dixon, had surveyed the boundaries between Maryland and Pennsylvania and the Lower Counties from 1763 to 1768, returned to England late in the latter year, and there, until the 1780's, worked on projects for the Royal Society and for the Commissioners of Longitude.

In September 1786 Mason, with his wife and children, returned to Philadelphia and a few days later wrote to Dr. Franklin the following letter: [2]

Philadelphia Septm 27th, 1786

Dr. Benjamin Franklin

Sir

I have a family of Wife seven sons and a Daughter all in a very helpless Condition as I have been confined to my Bed with sickness Ever since I came to town which is twelve Days. Had I been able I would have laid before you Something Curious in Astronomy; the Expence of putting it in Execution would be very trifling. I Do hereby send you a plan of the Design. N.B. You may hear of me at Mr. Michael Denisons at the George tavern the corner of Arch and second streets

I am
Sr your most obd servt
Chas Mason

Mason continued ill and died on October 25. Funeral services were held at Christ Church on the following day and the burial was made in Christ Church Burying Ground. The grave is not marked.[3] An obituary notice appeared in at least three of the local newspapers.[4] It reads as follows:

On Wednesday the 25th of October, died in this city, Mr. Charles Mason, lately from England, the author of the most accurate set of *Lunar and Solar tables,* that has ever been exhibited to the public. He was formerly employed in conjunction with Mr. Jeremiah Dixon, to run the boundary line between Pennsylvania and Maryland, which they executed with great skill and accuracy. Since his return to England he has been principally employed in correcting and improving the *Lunar tables* of the celebrated Professor Mayer, and has succeeded so far as to present the board of longitude in London, the best and most exact set of lunar tables that were ever constructed; for which they gave him in the year 1780, £750 sterling; but as he had spent the most of his time since he left Philadelphia, in this laborous work, and had a numerous family to maintain, most of this money was spent before he received it, and he has now left in this town, a widow with eight small children, without any thing to support them, but the charity of well disposed persons, and the notice of that state to which his former labours were so beneficial.

His success in his former improvements of the lunar tables, and his perfect acquaintance with that abstruse and laborous business, had engaged him to begin another and still more accurate correction of them; but dying before he could finish the same, he left his manuscripts and papers to the reverend Dr. Ewing, provost of the University of Pennsylvania, requesting him with the earnestness and zeal of an astronomer to undertake the laborous task, and to exhibit to the world an American set of lunar and solar tables, which should be still more accurate than any thing yet published in Europe. His former acquaintance with the provost as an astronomer and mathematician, induced him to leave his valuable manuscripts to him, in hopes that some way may be devised of making them useful to the world.

[1] Prepared with the aid of grants from the Penrose Fund of the American Philosophical Society. The authors thank Sir Harold Spencer Jones, Astronomer Royal at Greenwich Observatory, for the courtesies that he has extended to them. He permitted one of them to search the records of the Commissioners of Longitude which are preserved at Greenwich Observatory. This resulted in the finding of records of Charles Mason's employment by the Commissioners and of a bundle of astronomical manuscripts in Mason's handwriting. The Astronomer Royal graciously permitted copies of these records and manuscripts to be secured by Library of the American Philosophical Society, where they became available to the other author.

[2] The letter is in the Library of the American Philosophical Society.

[3] Acknowledgments are made for this information to Mr. William W. Montgomery and to Dr. Joseph S. Hepburn.

[4] *Pennsylvania Packet* and *Daily Advertiser* Nov. 2, 1786; *Pennsylvania Journal* and *Weekly Advertiser* Nov. 4, 1786; *Pennsylvania Gazette* Nov. 8, 1786. Copies in Library of American Philosophical Society.

One may assert with confidence that the obituary was written by a person of scientific attainments (perhaps Franklin himself) who had intimate knowledge of Mason's work, for every statement in it, with one exception, may be confirmed from the *Nautical Almanacs* of the 1770's, 80's, and 90's, and from the *Minutes* of the Commissioners of Longitude during the same decades. This confirmation is to be exhibited in the pages that follow.

The one feature of the obituary that has not been confirmed is the statement that Mason presented his manuscripts and papers to Provost Ewing with the request that they be used in preparing "an American set of lunar and solar tables." However this statement bears the stamp of highest probability for, as will be shown, Mason while still in England was eager to improve his tables and the obituary shows that he brought the ambition with him to Philadelphia. While Mason was surveying the boundaries in America during the 1760's Reverend John Ewing was one of the commissioners for Pennsylvania who supervised the work. Both Ewing and Mason had continued active in astronomical work, Ewing in Pennsylvania, Mason in England.

In October 1786 Mason found himself ill in Philadelphia with his cherished work unfinished and with little hope for continuing it. His old friend and co-worker Dr. Ewing, then Provost of the University, was right at hand. Naturally Mason gave his papers and manuscripts to Dr. Ewing, with an appeal to carry on.

What has become of those manuscripts and papers? This article attempts to answer the question.

There will be presented evidence which has been gathered from different but closely related sources. They are:

1) Extracts from the *Minutes* of the Board of Longitude from 4 March 1769 to 6 June 1805.[5] They all refer to work done for the Board by Charles Mason and to appeals made to the Board after Mason's death by his widow and by two of his sons. The extracts were made at Greenwich Observatory, where the *Minutes* are preserved, by one of the authors during September 1948.

2) Manuscript papers and tables in the handwriting of Charles Mason which are preserved at Greenwich Observatory among the records of the Board of Longitude. Films of these documents were made by permission of the Astronomer Royal at Greenwich and are deposited in the Library of the American Philosophical Society.

3) *The Nautical Almanac*, an annual founded by Astronomer Royal Nevil Maskelyne in 1765, and first issued for 1767. Charles Mason contributed to it during the 1770's and early 1780's. For many years after Mason's death prefaces of sucessive issues of the *Almanac* continued to acknowledge indebtedness to him.

4) *Mayer's Lunar Tables improved by Mr. Charles Mason;* published by Order of the Commissioners of Longitude, London, 1787.

*Minutes* of the Board of Longitude for 4 March, 1769, for 17 November 1770, and for 28 November 1772 show that Charles Mason was then working for the Board under the supervision of Astronomer Royal Maskelyne. From 1756 to 1760 Mason had worked at Greenwich Observatory as assistant observer to Astronomer Royal the Rev. James Bradley. During that period Professor Tobias Mayer of Goettingen University had submitted his *Solar and Lunar Tables* to the Board of Longitude in application for a premium for improved aids in finding longitude at sea. The Board had handed *Mayer's Tables* to Astronomer Royal Bradley for investigation and report. Mason had assisted Bradley in this work.

During the 1760's Mason had been away from England on expeditions, to South Africa and St. Helena (1760–1762), in the American Colonies (1763–1768), and in northern Ireland (1769). During the 1770's he was again in England engaged in work for the Commissioners of Longitude in which he put to use the knowledge and experience acquired under Dr. Bradley at Greenwich during the 1750's.

The *Minutes* just referred to mention Mason's work on "places of the Moon and fixed Stars deduced from Dr. Bradley's Observations." For this Mason was ordered paid 150 pounds sterling on 17 November 1770 "it appearing by the report of the Astronomer Royal that the calculations cost the said Mr. Mason above a year's hard labor." On 28 November 1772

the Astronomer Royal laid before the Board a Work of Mr. Charles Mason's for improving *Mayer's Ta-*

[5] "In 1714 the British Government offered £20,000 for any practicable method for finding longitude (at sea) within half a degree, with lesser prizes for less accurate methods. A Board of Longitude was set up to administer the funds, and before it wound up in 1828 it had paid out more than £100,000 in assistance and rewards to inventors." Wolf, Abraham, *A history of science, technology, and philosophy in the 18th century*, 153, N. Y., Macmillan, 1939.

*bles* x x x x ; and at the same time reported that he has reduced the Errors of those Tables to about one half; and the said Mr. Mason x x x x x by his declaration, that it had employed the whole of his time for near two years;

Resolved x x x that he be paid 250 guineas for his trouble x x x x ,

And that the said Work be printed under the direction of the Astronomer Royal and Copies delivered to each of the Computers of the Nautical Almanacs.

Among the Mason manuscripts at Greenwich Observatory appears "Mason's Computations of the Moon, 1750–1759, Tables of 1772." It is catalogued as Maskelyne Mss. Class A, No 387. And in the preface to the *Nautical Almanac* for 1773, which was written by Astronomer Royal Maskelyne, appears the acknowledgment:

To this ephemeris are annexed x x x a Catalogue of the Places of 387 fix'd Stars x x x x adapted to the Beginning of the Year 1760, x x x x calculated from the late Dr. Bradley's Observations by Mr. Charles Mason formerly his assistant.

The preface of the *Nautical Almanac* for 1774 was signed by Maskelyne at Greenwich on July 2, 1772. It contains the following reference to Mason's work:

To this Ephemeris are annexed 1220 Longitudes and Latitudes of the Moon, deduced from the late Dr. Bradley's Observations, made with the new Meridian Instruments at the Royal Observatory constructed by Mr. Bird, between Sept. 13 1750 and Nov. 2nd 1760, and compared with a Set of manuscript Tables improved by Dr. Bradley from Professor Mayer's First manuscript Tables. The greater part of these calculations was made during Dr. Bradley's Lifetime by himself and his Assistant Mr. Charles Mason; and what was left unfinished has been completed by Mr. Mason since at the Instance and at the Expence of the Board of Longitude. A Series of Observations this for Number and Exactness far excelling any thing of the same Kind which the World ever saw before, and which present or even future Astronomers will not easily surpass in Accuracy, affording a sure Touch-stone for trying the best modern Lunar Tables and Theories, and Means for improving them! Accordingly the Board of Longitude have thought proper to employ Mr. Mason farther in making the necessary Calculations for improving Mayer's printed Tables, under my Direction, by the Help of this Series of Observations, which comprehends somewhat more than a Period of the Moon's Apogee; and I have the Pleasure to find from that Part of the Work which is already done, that the Corrections (Contrary to Expectation) turn out so considerable as to give Room to hope that, when all the corrections are made, the greatest Errors of the Tables may be reduced within a much narrower Campass than they are at present.

The Board of Longitude took cognizance of Mason's work in preparing the tables, which appeared in the *Nautical Almanac* for 1774, at its meetings held on 15 January and 25 June 1774. An extract from the *Minutes* of the earlier meeting reads:

The Astronomer Royal laid before the Board Mr. Mason's Computations of the remainder of the tables of the Moon in Latitude requisite to complete the improvement of *Mayer's Tables* and also a comparison of the new tables of the Moon with 1200 of Dr. Bradley's observations both in Longitude and Latitude x x .

Resolved—In Consideration of the long time which the said Work had taken up, to give Mr. Mason a reward of 100 Guineas for his trouble and loss of time.

The preface to the *Nautical Almanac* for 1777 was signed by Astronomer Royal Maskelyne at Greenwich on January 12, 1776. It contains a reference to Mason's *Tables of the Moon*. The statement now to be quoted continues to appear in the prefaces to *Nautical Almanacs* until 1787.

x x the calculations of the Moon were made in this Ephemeris, for the first time, from new *Tables*, improved from *Mayer's Tables*, composed by Mr. Charles Mason, under my Direction, from calculations made by Order of the Board of Longitude upon the Series of lunar Observations made by the late Dr. Bradley, and published in the *Nautical Almanac* of 1774. In these new *Tables*, the Epoch of the Moon's mean Longitude is 1″ less, that of the Apogee is 56″ less, and that of the Ascending Node 45″ more, than in *Mayer's* printed *Tables*, and the Equations are calculated to Tenths of a Second. Moreover, One new Equation is introduced whose argument is the mean Distance of the Moon from the Sun's Apogee, and Maximum 16″.4. These new *Tables*, when compared with the above-mentioned Series of Observations, a proper Allowance being made for the unavoidable Error of Observation, seem to give always the Moon's Longitude in the Heavens correctly within 45 Seconds of a Degree; which greatest Error, added to a possible Error of one Minute in taking the Moon's Distance from the Sun or a Star at Sea, will at a Medium only produce an Error of 50 Minutes of Longitude. x x x

The year 1777 brought other items of significance. *Minutes* of the Board Longitude for 22 November 1777 record that among papers laid

before the Board on that date and referred to the Astronomer Royal for his examination were "Some improved Solar and Lunar Tables on the Newtonian System of Gravitation by Mr. Chas. Mason."

Among the Mason manuscripts preserved at Greenwich Observatory are two with the title, "Lunar Tables in Longitude and Latitude according to the Newtonian Laws of Gravity by Charles Mason 1778" (listed as Maskelyne Mss. Class A, No 386 and No 388.)

Attached to the *Lunar Tables of 1778* which are catalogued at Greenwich as No. 388 is a note that seems to be significant. It reads:

N.B. a copy of these Tables were laid before the board of Longitude held the 28th of Novr 1778 for which the Commissioners offered me 750£ which I refused. But after finding my Enemies at the Board too numerous and inflexible I was advised by some friends to accept the premium offered which I did at the Board held the 6th of March 1779. With what reluctance this was done I leave the world to judge when the Tables gives the ☽'s Place far within the Limits of the Act of Parliament which offers for such Tables a reward of 5000£.

Charles Mason

N.B. The Equations marked at the top with a * were those given to the Board.

*Minutes* of the Board of Longitude during 1778 and 1779 throw light upon Mason's work and upon his relations with the Board. On 7 March 1778,

The Board considered a letter of Mr. Charles Mason of the 16th Nov. last prefixed to the *Solar* and *Lunar Tables* laid before the last meeting, wherein he claims the reward of £5000 and came thereupon to the following resolutions vizt.

That it is the opinion of this Board that Mr. Mason is not entitled to the reward claimed by him for the said tables as he hath not complied with the terms of the act; But whether the said *Tables* when he has made the further improvements he says they are capable of, may not give him a claim to some gratuity must be a matter of future consideration when those improvements are made and they shall have been more minutely examined.

On 6 June 1778 the Board adopted a resolution:

That Letters be written to the Navy Board for paying the sums undermentioned to the persons and for the services &c against each exprest, vizt.

£250 to Mr. Charles Mason as a reward for his care and pains in making considerable improvements in *the Solar and Lunar Tables* laid before them in Novr last and as an Encouragment to him to endeavour to bring to a still greater degree of perfection.

On 28 November 1778:

A Letter of this date from Mr. Chas Mason was read representing that he had gon tho' [*sic*] corrections of the *Tables of the Moon's Latitude* & inclosing those *Tables* as finally finished in the best manner that lies in his power. The Board then took into Consideration what further rewards to give him for his Labour in that work, and having discoursed with him upon the subject came to a Resolution to give him £500 in addition to the £250 already given to him, but he not being satisfied therewith, the further consideration of the matter was, at his request, postponed 'til another meeting.

The said Mr. Masons improved *Lunar Tables in Longitude* delivered in March 1778, together with the result of the comparison of them with Dr. Bradley's Observations were referred to the Astronomer Royal for his examination & report.

On 6 March 1779:

Mr Charles Mason attending was called in and agreed to take the £500 offered him by the Board at last meeting

Resolved—That it be required of Mr Mason to deliver up the method he used in forming his *Tables* and also his calculations of the Moon's places from his *Tables* corresponding to Dr Bradley's Observations, before he be paid the £500 above mentioned; and he was sent for in, made acquainted therewith, and promised to deliver them up accordingly.

On 10 July 1779 the Board directed:

That Mr Charles Mason's new *Lunar Tables* and other papers relative thereto be put into the hands of the Astronomer Royal; in order, as he proposes, that the said *Tables* may be reduced and adjusted to mean arguments, by proper persons to be employed under his inspection; and that the *tables* so altered be afterwards printed.

On 27 November 1779:

The Astronomer Royal acquainted the Board that he had received a letter from Mr Charles Mason giving an account of some further corrections which he had made in the Lunar Equations, and desireing to know if the Board will encourage him to go on with them. And the Astronomer Royal was desired to let him know that, as he set forth that the *Tables* for which he so lately recd a reward of £750 were finally finished in the best manner which lay in his power, the Board cannot think of giving him any such encouragement.

Minutes of the Board of Longitude record that, on 3 March 1781,

M^r Hornsby[6] presented some Lunar Tables completed by M^r Mason in last year, being more accurate than his former ones; and submitted to the Board whether it might not be adviseable to make the said M^r Mason some allowance for the same; the Board after some Debate upon the matter, came to the following Resolutions vizt.

That the said M^r Mason be allowed £50 as a compensation for the said *Tables;*

That they be put into the hands of the Astronomer Royal who was desired to get the same printed, And,

That the Computation of the *Nautical Almanac* (beginning with that for 1789) be made from the s^d *Tables.*

All mention of Charles Mason seems to vanish from *Minutes* of the Board for the next decade, but during that decade much took place. Mason emigrated to America and died in Philadelphia on October 25, 1786. In 1787 there was published in London by order of the Commissioners of Longitude *Mayer's Lunar Tables improved by Mr. Charles Mason.* Mason had signed them on May 23, 1780 at Sapperton, Gloucestershire. The *Nautical Almanac* had continued until 1788, as it began in 1777, to base its calculations of the Moon upon *"new Tables, improved from Mayer's Tables, composed by Mr. Charles Mason."*

The preface to the *Nautical Almanac* for 1788 was written by Astronomer Royal Maskelyne at Greenwich on July 7th, 1783. It contains the following announcement:

> In the next Ephemeris the Moon's Place will be computed from new *Tables, composed by Mr. Charles Mason,* still more exact than the former ones, as well from the Correction of the former Epochs and Equations as from the Introduction of several new Equations and the Whole being calculated to Tenths of a Second.

The preface common to the *Almanacs* for 1789 and 1790 amplified the foregoing announcement:

> x x x the Calculations of the Moon, which have been made since the Year 1777 inclusive from new *Tables, improved from Mayer's Tables, composed by Mr. Charles Mason,* under my Direction, from the Calculations made by Order of the Board of Longitude, upon the Series of Lunar Observations made by the late Dr. Bradley, and published in the *Nautical Almanac* of 1774, are in this Ephemeris, for the First time, computed from *Tables* still farther corrected by Mr. Mason, and rendered more exact by the Addition of Eight Equations to the Number in *Mayer's Tables,* taken from Mayer's Theory, but settled as to the Maxima from the said Observations, and the Whole being calculated to Tenths of a Second. These new *Tables,* when compared with the above-mentioned Series of Observations, a proper Allowance being made for the unavoidable Error of Observation, seem to give always the Moon's Longitude in the Heavens correctly within 30 Seconds of a Degree; which greatest Error, added to a possible Error of one Minute in Taking the Moon's Distance from the Sun or a Star at Sea, will at a Medium only produce an Error of 42 Minutes of Longitude. The Error of the same *Tables* in Latitude seems never to exceed a Minute, which will but triflingly affect the computed Distances of the Moon from the Sun and zodiacal Stars set down in the Ephemeris.
>
> Greenwich — Nevil Maskelyne
> August 18th, 1783 — Astronomer Royal

It will be recalled that when Charles Mason died in Philadelphia during October 1786 he left a widow, seven sons and a daughter, "without any thing to support them." In less than five years after Mason's death the Board of Longitude began to hear from the widow. *Minutes* of the Board record that on 5 March 1791,

> A Memorial was read from Mary, Widow of Charles Mason, Author of the *Lunar Tables* of 1780, desiring to be made some allowance beyond the £50 paid to her late Husband for the said *Tables,* and offering two Manuscript Books of Astronomical Tables & Calculations left by her Husband; And the Board having taken the said Memorial into Consideration were pleased to direct the Secretary to pay M^rs Mason the sum of £50 as an additioned [*sic*] reward for the *Tables,* and a further sum of £50 for the two Manuscript Books, which were delivered to the Astronomer Royal for the use of the public.

One year later, on 3 March 1792, *Minutes* of the Board record;

> The Widow of Mr. Charles Mason attended and delivered a bundle of her Husband's papers relating to the *Lunar Tables* which she had just received from America, and submitted to the Board what Compensation they might think reasonable to allow her for the same; Ordered that the said papers be transmit-

[6] Thomas Hornsby F.R.S., 1733–1810, succeeded Rev. James Bradley as Savilian professor of astronomy at Oxford University in 1763. He served as one of the Commissioners of Longitude. He laid the foundation for the Radcliffe Observatory at Oxford. He edited the first volume of Dr. Bradley's Greenwich Observations, published by the Oxford Press in 1798. He corresponded with Charles Mason. On page lxxxix of Rigaud's "Miscellaneous Works and Correspondence of Rev. James Bradley," Oxford 1832, appears the statement: "At the Oxford observatory there are a number of manuscript books and papers of Charles Mason as well as many of his letters to the late Dr. Hornsby." A search for these documents has so far failed to reveal them.

ted to the Astronomer Royal, and that he be desired to examine and report what they contain.

*Minutes* of the Board report on 2 June 1792:

M^rs Mason having sent for her late Husband's papers from America, on the encouragement of the Astronomer Royal, the same were presented to the Board at their last Meeting, and referred to the Astronomer Royal, but he having stated to the Board that he hath not had leisure to examine them and that M^rs Mason was desirous of returning immediately to America, the Board were pleased, in consideration thereof, and of the Expence She has had at in getting over the said papers, to order the Secretary to pay her the Sum of Twenty pounds, and to refer the merit of the Papers to future Consideration.

On 1 December 1792:

The Report of the Astronomer Royal upon the Contents of the late M^r Charles Mason's papers which were presented to the Board in March last, by his Widow, being read the Board were of opinion some of the papers might be useful for examining the Calculations by which M^r Mason had established his *Lunar Tables of 1780*, from which the *Nautical Almanac* is now calculated, wherever any doubt might arise; and that others of the said Papers might be useful by facilitating the Calculations of the Moon's place by the said *Tables* for Dr. Bradley's remaining 1220 Observations, of which 177 only had been computed by M^r Mason & given by him to the Board, a preparation being made for the whole Calculation and part of it performed in these papers by means the degree of exactness of these Tables might be better ascertained than it is at present, and the *Tables* themselves might be farther improved.

The Board thereupon came to a Resolution to authorize the Astronomer Royal to make M^rs Mason an Offer of the Sum of One Hundred pounds for the purchase of the said Papers, the same to be considered as a full Compensation and Reward for her Husband's Calculations concerning the *Lunar Tables*, and for his improvement of the same; And in case she should decline this Offer, he is desired to return the papers to her.

On 2 March 1793, "The Secretary reported that had had paid the Widow of M^r Charles Mason £100."

From October 1786 onward for many years Rev. John Ewing had been a busy man. He was pastor of a large congregation and Provost of a young and struggling university in the principal city of a newly established confederation that was striving to stabilize itself. Political and economic problems were acute. Dr. Ewing probably found no leisure to work on lunar tables. And so the widow of Charles Mason turned to the Commissioners of Longitude and sold her late husband's papers and manuscripts to them.

Among the manuscripts of Charles Mason now at Greenwich Observatory are some that may have been among those that the Widow Mason sold to the Commissioners. Maskelyne Mss. Class A, No. 368 is a day by day book that Charles Mason had used through many years. It contains computations, tables, and notes. It contains a copy of Dr. Bradley's directions for observing the transit of Venus of 1761, references to a "table-land near sea" (probably on St. Helena), "Tables needed in America," "Scheme of new tables this wrote in ye year 1757 when at Greenwich," "Inscription on tomb of Edmund Halley and wife copied at Greenwich July 1762," and so on.

Maskelyne Mss. Class A, No. 389, contains "Mason's Computations of Lunar Observations 1765–1768, Mason's Tables 1778"; "Lunar Computations from the Tables of 1778 beginning May 31, 1765 and ending (with the year 1766)." They are contained in two books, both incomplete. Fourteen steps are listed, at the beginning of the second book, showing the procedure to be followed. These appeal to the writers as being just the sort of manuscript that Charles Mason may have given to Dr. Ewing in October 1786.

The century turned and the Commissioners began to hear from two sons of the late Charles Mason. As recorded in their *Minutes* on 5 June 1802:

A Letter from M^r Mason and his Brother Doctor Isaac Mason (who was christened by that name) requesting a payment from the Board as a proper acknowledgment to the family of the late M^r Charles Mason, for the benefit the public has received from his tables, was read.

Resolved Unanimously that they do not think themselves authorised to comply with this request.

On 6 June 1805

A Letter signed William C. Mason to the Board, demanding from the Board a large Volume of Manuscript tables of his late father laid before the Board for their inspection in the year 1801, by Professor Hornsby.

Ordered that Mr. Mason should be informed, that, the tables he mentions are the same as published by the Board, for which his father, and his representatives received a valuable consideration, and therefore are the property of the Board, but which tables were returned to Dr. Hornsby by whom they had been sent for examination.

Mason's astronomical correspondence[7] with Professor Thomas Hornsby, which was formerly preserved at the Radcliffe Observatory, should still be sought.

Mason's *Lunar Tables* continued to receive commendation in prefaces of the issues of the *Nautical Almanac* through many years. And in 1852 Robert Grant F.R.A.S. in his *History of Physical Astronomy* remarked on page 118, "Towards the close of the eighteenth century the most esteemed tables of the Moon were those of Mayer, revised in 1780 by Mason."

At the beginning of this article a letter from Charles Mason to Benjamin Franklin was quoted. It was written in Philadelphia on September 27, 1786 and it makes reference to an astronomical project that Mason was anxious to lay before Dr. Franklin. No information about the nature of the project has been found. Is it rash to surmise that it was related to the *Lunar Tables* that Mason had worked upon so long and was so eager to improve?

Perhaps during the past one hundred fifty years some authorities on Lunar Tables have compared Mason's manuscripts at Greenwich Observatory with his *Tables of 1780,* published by the Commissioners of Longitude in 1787. Experts would see far more than do amateurs. If no record of such a study can be found, perhaps a study can be made.

[7] Dictionary of National Biography—Charles Mason; S. P. Rigaud, *Miscellaneous Works and Correspondence of Rev. James Bradley,* lxxxix, Oxford 1832.

# CHARLES A. COOKE, MOHAWK SCHOLAR

**MARIUS BARBEAU**

National Museum of Canada

To the short list of native Iroquois scholars—J. N. B. Hewitt and A. C. Parker—must now be added the name of Charles A. Cooke, eighty-two years of age, who has completed his life-long search for Iroquoian proper names and their authentic interpretations. His manuscript contains more than 6,000 names taken down in missionary spelling, and includes phonetic renderings by the author of this short biography, and tape recordings made in duplicate by the collector himself, at the National Museum of Canada. In the light of this monumental accomplishment, the personality and career of Charles Cooke as a scholar deserves consideration here.

At the end of February 1893, his father, Angus Cooke, took him as his interpreter to Ottawa, where he had some business to transact with the Department of Indian Affairs. He, the father, had become an "old-time" missionary on the Gibson Reserve at Muskoka; he had built a church and was considered the chief. While in Ottawa, father and son called on Col. O'Brien, friend of theirs and federal member of Parliament for their district. The Colonel was so impressed with young Charles, whose native name is *Thawennensere,* that he coaxed him to stay in the capital city and take up a clerical position at the Indian Affairs. This meant a change of plans, for the young man was bound for Montreal where he intended to begin his studies in medicine at McGill. Still undecided, he resolved to probe his opportunities there, in the Records Branch, where under the direction of a chief, Samuel Stuart, he had to classify documents both old and current. He also acted as translator and interpreter for the Iroquois dialects, whenever deputations or visitors called upon the Department. Soon his interest in the meaning of words and significance of personal names awakened, and such words and names often puzzled him. Out of curiosity and genuine incentive he began in a haphazard way to collect materials, asking for more names, their meaning, and the tribes and clans to which the names belonged. He had already started casually at first, off and on, to witness the snow-ball-like accumulation within his personal files of names and various items. Most of all the old traditional names drew his attention, among them the fifty titles of the founders of the League of the Five Nations, and he never ceased to seek them out. In 1930, after exhausting live sources, he paid a visit to Caughnawaga, where he was impressed by the old Jesuit records of baptism, marriage, and burial, from the earliest days of the Jesuit mission. By then the contents of the annual reports (mostly from 1911 to 1918) of the Anthropological Division of the National Museum of Canada were familiar to him, and he had studied the eight hundred Huron-Wyandot names recorded at first hand by me, with whom he had become acquainted years before, through his chief, Dr. Duncan C. Scott. There he was amazed at the close similarity between this other Iroquoian dialect and the Mohawk, and the personal names in both dialects.

Letters of enquiry about the Indians often received from abroad were referred to him for an answer, and this led to research in printed and oral sources. To his regret he found out that the Indians themselves, instead of being interested in their own language and names, would give him scant encouragement. Suspicious, they did not respond whole-heartedly to his questions. But, as if to compensate, he received inspiring cooperation from the Catholic missionaries at St. Regis, Oka, and Caughnawaga, especially from Fathers Nadeau and Laurent in the latter two missions, where he examined the records in the Archives, and from the Rev. Olivier Maurault in Montreal (now Rector of the University of Montreal). Pursuing his studies after he had retired from the Civil Service, he spent a month, early in the last war, at Caughnawaga and Montreal, and consulted, in Montreal, Father Desjardins, archivist at the Jesuit college of St. Mary's, and E.-Z. Massicotte, archivist of the Court Archives of Montreal. At various times he also met F. W. Waugh, of the National Museum, and collected from him Iroquois names of plants; and Dr. Robert Bell, the geologist who gathered Indian legends. To Dr. Bell he furnished translations of Iroquois texts and brought

in legends written at his request by Louis Thompson, an Abenaquis-Iroquois of the neighborhood. From 1935 to 1939 he met J. N. B. Hewitt four times at the Smithsonian Institution, after some correspondence with him, and then discussed various Iroquois names reproduced in the *Handbook of American Indians,* especially those of the culture hero Deganawida. While they agreed in the interpretation of some names—Hewitt spoke Seneca and knew a little Mohawk—they differed in others, for instance, in Brant's name: Thayendanegan. It was only a few years ago that he became acquainted with Dr. William N. Fenton, of the Smithsonian, who introduced him to Dr. William E. Lingelbach, Librarian of the American Philosophical Society. From that moment on, he was determined to put the last touches upon his huge manuscript of Iroquoian names. Indeed, the first copy of this unique document, along with phonetic spelling and tape recordings, has now been acquired by the Society for its preservation in public archives.

Upon meeting Charles A. Cooke, a white-haired resident of Ottawa in the midst of his family comprising his wife of English birth, and three married children and nine grandchildren, one might not suspect at first that this urbane gentleman with a deep voice once was a little Mohawk boy unable to speak English, on an Indian reservation in a northern woodland. For his backgrounds have undergone a drastic evolution, while he was garnering rich experience from the duality of his life and culture.

Born at Oka on the twenty-second of March 1870, in a frame-house which still stands, he first knew his father, Angus Cooke, under his Mohawk name—*Adonhgnundagwen* (He-has-left-the-Point-of-land). But his father, who could not speak English or French, belonged to no clan as is true of all full-blooded Iroquois, because his own mother, at St. Regis, was French, and clanship descends through the mother. Angus' father was named Bearfoot, of the Grand River Reserve. Charles' own mother, whose family name was Katrine (*Thiweza,* in Mohawk),[1] belonged to the Bear clan, so she conferred upon her son by his very birth the kinship of the Bear. Her father was Louis Katrine, and mother, Felicide Tarbell, of St. Regis.[2] Her grandfather, Peter Tarbell, had been a captive from New England who, with the Williams and others who were part American and Indian, had established the colony of St. Regis, away from Caughnawaga to which they first had belonged.

FIG. 1. Charles A. Cooke.

Charles' father, Angus, was also of mixed descent. His mother (Charles' paternal grandmother) belonged to the Raymond family, French Canadians, of Hudson opposite Oka. She had been given, with her sister, to an Indian family to be brought up, and they had married within the tribe.

At five and six years of age, Charles began to attend the Methodist mission school at Oka. But a schooling there was primitive and casual. The teachers often changed, and the boy for his age had too many responsibilities besides going to school. His father, who had bought a farm behind Oka, was forced by the depression to work in the lumber camps, and to leave the care of the homestead in the winter mostly to Charles who was his eldest in a family of seven: the others were Thomy, Nancy, Joseph, Mary, Elizabeth, and Rina. In the fall of 1881 the farm house was sold and the Cooke family moved out to Muskoka, in the heart of the Northern forest. A log house was built of timbers cut and erected by their own hands. The

[1] Born at Oka in 1841, she died in 1927.

[2] She died in 1885.

following year, when Charles was twelve, a school was opened in another log house, where about twenty children gathered. It is there that he first attempted to learn English—Mohawk only being spoken at home. The first teacher, Donald Carmichael, grew interested in the boy and taught him the rudiments. Those were pioneering days. The trails through the woods to the school had to be blazed, and church services on Sundays were held in various log-houses by visiting missionaries. Angus Cooke, Charles' father, was engaged by the Methodist Missionary Society to preach regularly, as he could read the Indian Bible, having learned by himself. He was then a lumber jobber in a territory under license by a lumber concern. Instead of hiring men to cut logs, the Company sublet lots of three hundred acres to jobbers who cut the logs and hauled them to the streams for floating. The outlet was the Georgian Bay.

Angus Cooke, in his zeal for the welfare of his compatriots thought that his son Charles should enjoy the benefits of school education and of learning English. So he sent him to the Mount Elgin School, a resident school under the Methodist missions, at Munsie, Ontario. But the boys there, from the Algonkin reserves in the vicinity, spoke a "pigeon" English, and as soon as they realized that Charles was a Mohawk—the only one of his kind there—they were roused by ancient tribal animosities, and they "ganged up on him" during the manual labor hour after school.

His Mohawk blood responded to the challenge and single-handed he defended himself well enough to set things aright, to win the respect and, eventually, the friendship of the others, irrespective of race. But after Charles had been there for two years his father realized that this school had failed in giving good training in English. So he sent him to the public school at Gravenhurst near home.

While still going to school, young Charles worked at the lumber. But, determined as he was to acquire an education, he managed to get through school in 1886, and, in 1888, to pass his junior matric at the Gravenhurst high school. Then the Methodist Missionary Society gave him a teaching post for a year at the Indian school on the Gibson Reserve, until he was seventeen or eighteen. After this he went to work, from April to November, for the Georgian Bay Lumber Company. His assiduity in every pursuit was exceptional: he never lost a day's pay. So satisfied with his record was the manager, that he engaged him as a clerk in the lumber camp. Eventually he gladly heard that his young employee wanted to go on with his studies. For an encouragement he gave him a small bonus, "to get him started." So his protégé proceeded to the Gravenhurst High School, where he stayed a year. But earning a living soon forced him back to mill work, where, for a while, he became a scaler. Nothing daunted him in his progress, and he was about to go to the University when he entered upon his civil service career in Ottawa.

He was married twice; first, in 1896, to Edith Susan Day, born in London, England, who died in 1915. Of this marriage three children were born: Sidney, in 1904, still living, and chief-accountant of the Noranda Mine; Minola (Mrs. Steele), and Kathleen (Mrs. Bruce), both residing in Ottawa. His second marriage, in 1919, was to Minnie Florence Day, his deceased wife's sister.

Appointed recruiting officer, in 1916, for the Six Nations, and attached as lieutenant to the 114th Battalion, he soon rose to the rank of recruiting officer in the army for the Indians of all parts of Canada. In this capacity, he visited the Iroquois reserves of Ontario and Quebec, as well as those of the Algonkin (Ojibway) of Western Ontario. And this gave him fresh opportunities for research in Iroquoian names.

After his retirement from the civil service, in 1926, he found that time, for an active worker like himself, was weighing heavily on his hands. So he entered upon another career—from 1926 to 1934—that of a lecturer and recitalist, whose programs consisted of Indian lore and songs, of talks on Indian culture as a whole, of recitations of Pauline Johnson's poems, and of songs with piano accompaniments by Cadman and Lieurence. In his productions he used an Indian costume, sang Iroquois and Huron songs, and sketched out Indian dances. Pauline Johnson had blazed the trail along similar lines. As a wide public proved responsive, he toured more than once Canada or parts of Canada, and sections of the United States.

Upon reaching his eighties, in the summer of 1949, he joined the National Museum party of Marcel Rioux and the author of this short biography, in their survey of Iroquois linguistics and ethnology at Grand River, Ontario; and again, in 1951, to complete the grammatical study of Mohawk, Cayuga, Onondaga, and Tuscarora. And, in 1950, he assisted Allan Wargon, of the National Film Board of Canada, in making a film representing the life and religious activities of Handsome-Lake (Cayuga and Onondaga) group of the Five-Nations in Ontario.

# IROQUOIS PERSONAL NAMES—THEIR CLASSIFICATION

CHARLES A. COOKE

THE custom of name-giving among the Iroquois may be as old as the people themselves. In historical times, the Iroquoians consisted of at least eight nations: Mohawk, Oneida, Onondaga, Cayuga, and Seneca, within the League of the Five Nations; and outside, to the north, Huron-Wyandot; and, to the south, Tuscarora and Cherokee. No graphic record was ever made of their personal names, for the Indians knew not the art of writing. Even their traditions and tales, when sometimes they allude to the remote past, remain silent on the origin of the names. The only avenue for the present-day inquirer was, first to study the etymology of the Iroquois word for name: *ga-sen-na*, and to collect the names themselves—about 6,200—as the author of this classification has done in his lifetime.

## THE WORD FOR NAME

The radical or the word for name is: *-sen-n-*. Four other words have the same stem: (1) *-sen-n*(a): chance, luck; (2) *-sen-n*(a): throw, shot; (3) *-sen-n*(en): half, middle; (4) *-sen-n*(yon): victory. Every one of these played no small part in the life and language of the early Iroquois, whose belief in the spiritual sway or luck was deep-rooted—he courted them at all times. Of utmost importance to a warrior and a hunter was the possession of the skill in handling his weapons. Aware of a dual existence, of being linked with the supernatural, endowed with an immortal soul, the Iroquois' body died, but his soul and his name lived on. Victory, the crowning achievement for a warrior, was the object of an old saying of the Mohawk: "Was there ever a man born so low as to have no ear for the whoop of victory?" Anyone of these or all of them may have been the source of the word *ga-sen-na*—"name." Luck, by its mysterious influence, has evoked reverence and veneration. When a name referring to it is bestowed on any one according to the accredited ritual, a spiritual consciousness descends upon him or her; and, as the name is immortal, it was a surety for favors in this life and the promise of an entrance into the abode of the blest hereafter. To mention one's own name or that of a deceased person, was like sacrilege, and to keep anyone from committing such irreverence, several names besides the main one were given to the people in high standing. For instance, a famous Huron chief and warrior in the days of Governor Frontenac, in 1680, was known as Adario, Kondiaronk, Andienk, and the Rat, with six names attached to his person. In the spiritual light cast by the name-giving ceremonial, the names publicly conferred were perforce of the highest character; they rose to the standard of barbaric taste, and later were well received by a romantic civilization. The whole stock of names was of high and noble calibre. Not one out of 6,220 names analysed had any allusion to impropriety, much less to obscenity. It is a matter of pride for one of the nation who had compared these names to those of other races, both white and red, to realize that the Iroquois does not have to take a second place in the high quality of materials contained in his repertory of names, more especially when we remember that those names had come into being during the unpromising period of prehistory. The sense of the beautiful, and of the things uplifting, is evident in a great number of his names.

Three terms or radicals are used today when speaking of personal names: (1) *-sen-n*: "He-gave-me-a-name," Wa-hak-*sen-n*on; (2) A-ye-*na-ton*: "To-call" (by name) or "What-is-your-name?" Na-ho-ten-ye-sa-*na-tonh*-gwa? The question should be: "What do they call you?" The verb is made a substantive by the addition of a suffix, "gwa"; (3) the verb *yats*: "What-is-your-name?" (Na-ho-ten-ye-sa-*yats*?). These three terms are surviving remnants from other Iroquoian dialects. The last one (*-yats*) is Huron.

The Iroquois drew the contents for his personal names from the names of objects within the sweep of his observation: the phenomena of the heavens; the geographic features; the forest and grasses; the wild creatures of the forest, the fowls of the air, and the creatures in the waters; the atmosphere; the supernatural beings in mythology and lore; and finally from Man, with

his mind, vision, aspirations, and associations. With a store-house so replete at his command for the texture of personal names, there was no dearth for him.

## OCCUPATIONAL NAMES

The Iroquois hold a vague notion that the first names given to their ancestors were occupational names. In support they assert that man, from the beginning of time, had always struggled for the procurement of food for himself and those dependent on him. In the struggle, with crude equipment, primitive man often had pitted his intelligence and strength against the ferocity, strength, and wit of his animal-opponents. In such an encounter he often lost his gamble on life.

Seven different occupations are referred to in names. The foremost is that of a hunter, with twelve names equally divided between the two sexes. The rest are divided among ten toilers of the soil, the runner, the warrior, the medicine-man, the arrow-maker, the canoe-builder, the story-teller, and the name-bearer. The names under this heading given to women number about eleven, and are confined to hunting, farming, and running.

## ANIMAL NAMES

The early Iroquois, like all primitive people, lived close to nature, and had for companions the wild creatures of the forest and the fowls of the air. They were all familiar to him. He learned their ways and strove to imitate them in providing shelters, and in the strategy of hunting for food and clothing. They became attached to him, because their life was much like his own. He credited them with the powers of speech, so that, as shown in the legends, he could converse with them. They became his brothers, his guardians, and his best friends. In return he exalted them to the high plane of becoming his totems. They were to minister his needs, and to protect and guide him throughout his earthly existence. Some of them were credited with a share in the creation of the world: the turtle for bearing the earth on his back; the beaver and muskrat for getting from the bottom of the sea the soil for the creation of the "Island," and the water fowls for bearing on their wings the first woman after her downfall from the sky to a lower world.

Man's knowledge of the virtue of animal life in medicine for healing diseases peculiar to mankind came, it is claimed, from the wild animals. While his personal names referring to them are not as numerous as those of geographic features or of heavenly phenomena, yet they are held in high esteem because, next to man, animals have the magic of a life like his own.

The traits and ways of animals and fowls appealed greatly to the imagination of the early Iroquois. A bear was often spoken to or of as "uncle"; a squirrel as a mischievous, saucy unlicked cub; a chickadee, as a companionable gossip; and a partridge, as a medicine-man's co-drummer. The toughness of the teeth of beaver, porcupine, muskrat, and rabbit was legendary. When, in his growth, a boy reached the stage of shedding his first teeth, he was required by his parents to exchange his extracted tooth with that of a rabbit. I well remember when I went through this ritual. I extracted one that was ready to meet me halfway, and escorted it out under the dancing stars. After nervously calling a rabbit, I dickered with the bunny for an exchange. Following a brief, hurried, one-sided sales talk, I cast the extracted molar as far as I could in the direction where the opposite party was likely to be, busily examining his latest barter. For some time I waited to get his best front tooth. But it never came. This adventure under cover of night, with the unseen spirit of an animal, was rather uncanny. At the conclusion, it made me feel like "Little Jack Horner, what a big boy am I!"

## PLANT LIFE

The Iroquois is usually listed among the woodland races in North America because his habitat, though adapted by him to agriculture, embraced the wooded areas of the continent. Hence plant life was ever before his eyes, reminding him of his dependence on them for food (fruits, cereals, vegetables), medicine (for the healing of his ills), and shelter and comfort for himself and his dependents. His intimate knowledge of these plants grew until his life blended with theirs, and he could hardly exist without them. He became part of the plant-life of the country. No wonder he was known, in common with other Indians, as *karhagonronon*, "People-of-the-woods!" Plants were a source of food for the wild animals, and man drew his sustenance in part from the animals. He completed the triangle of life. The Iroquoian at all

times felt his oneness with vegetable life, and was not unmindful of his indebtedness to it when the moment arrived to show his appreciation by perpetuating in memory their names and bestowing them upon those near and dear to him. As a result, about 1,500 personal names collected among the Iroquois owe their origin to the various growths in vegetation.

Plants and trees to the Iroquois had also the magic of life, but in an unostentatious way, the most elusive, though, being the largest. They taught, so it is said, the lesson that the quietest influence in life does not necessarily belong to the tiniest but to the greatest as well.

Under this heading of *Plant Life* the following titles appear: forest, trees, shrubs, parts of trees, grasses and herbs, materials made of wood, houses, villages, palisades, implements, weapons, conveyances, household equipment, and agricultural produce, etc. Here is the number of names listed under the right caption: forest, 80 names (55 male, 25 female); trees, 79 (68–11); parts of trees, 300 (188–112); leaves, 61 (33–28); twigs, 79 (68–11); wood, 58 (48–10); firs, 47 (38–9); tree-tops, 46 (33–13); pine, 34 (24–10); vine, 30 (24–6); corn, 125 (77–48); houses, 105 (65–40); village, 176 (99–77); flowers, 194 (90–104); palisade, 17 (15–2); bark, 18 (9–9); herbs, 198; door, 28 (19–9); splints, 16 (3–13); thorn, 17 (9–8); ashes, 14 (4–10); weapons, 67 (57–10); bow, 26; arrow, 14; war-club, 11; spear, 9; sling, 1; blow-gun, 5; quiver, 1; fruit, 42 (15–27); tobacco, 13 (10–3); and many other trees, shrubs, and grasses.

Here are the names of prominent people who bore names after plants: Captain Joseph Brant, *Thayendanegen*, "He-places-two-bits-of wood-side-by-side"; Miss Kathleen Hughes, *Gajijya-waks*, "She-shakes-flowers." *Athondinon*, "She-leads-herb," an Onondaga girl teacher of an Indian school, at Mountain Mission, in 1685.

## GEOGRAPHIC FEATURES

The habitat of the prehistoric Iroquoian held within itself a great variety of majestic and beautiful features. Sky-blue lakes, like small oceans which the eye could not encompass, and countless other bodies of water lavishly dotted all over; the rivers which were the Indian's highways, like the mighty St. Lawrence, the Niagara, Ohio, Susquehanna, Hudson, Ottawa, Delaware, and Richelieu, with their waterfalls, cataracts, greeted the eye of the woodland dwellers; the chain of mountains, like the Appalachians, the Catskills, Adirondacks, the Laurentians, with their bold outlines, and their caves; the meadows that doze on both sides of the streams; the rustling corn-fields near a palisaded hamlet, under the guard of chief Odatshete; and other memorable sights that were graven in the memory of the Iroquois, and would stay with him "as long as the sun shines and water runs down hill, and the grass grows green."

FIG. 1. Joseph Brant, painted by Charles Willson Peale, 1797.

Attuned to nature's unspoiled grandeur, a worshipper of its beauty and majesty, and throbbing of its pulse, the Iroquois did not fail to immortalize these palpable features and perpetutate them in memory by coining names after them for the members of his own family and for friends. Every landmark of striking aspect in the wilderness aroused his fancy, as the lair of some ominous spirit ready to attack him and devour him. He was so susceptible to the sights and sounds of whatever seemed strange in nature that he peopled it with sprites and spirits. Fear can enslave the primitive man to distraction and leave him a weakling. Every waterfall encountered in the water-journey of an Iroquois canoeist brought out of him a tribute of sacrificial tobacco. He cast it upon the boiling waters as a propitiation to the spirit of the falls. The forest was the home of the Iroquoian, and the water stretches his trackless trails.

There are 616 names in our collection that have geographic features as their content. Of this

number, we count 26 different materials from which the names were taken: meadow, 116 names (52 male, and 64 female); river, 107 (83–24); land, 84 (65–19); soil, 51 (34–17); mountain, 45 (34–10); lake, 32 (28–4); water, 32 (15–17); field, 28 (7–21); island, 23 (13–10); stone, 22 (18–4); sand, 13 (7–6); depth of water, 12 (4–8); point, 9 (9–0); valley, 6 (4–1); flint, 5 (4–1); rock, 3 (3–1); and waterfall, 1 (0–1).

Three well-known Iroquois bore names under the headings of river, mountain, and lake: *De-ga-hyon-ha-ge*, Miss E. Pauline Johnson, Indian poetess; *Sga-nya-da-ri-io*, "Handsome-Lake," founder of Longhouse religion; *O-non-di-yo*, "Mighty-Mountain," name given to all monarchs.

## THE HEAVENS

The sky, the sun, the moon, the clouds, stars and thunder, and all heavens, were ever above the Iroquoian. Beyond his grasp, as it were, to them they were attributed the mystical essence of life, because of their mutations and movements. To the mind of man, they proved the most profound of all mysteries. He stood in wonder, then bent in acquiescence. His mythology came to the fore and bridged the gaps; the earth-land here was a replica of the sky-land. Beyond the blue was the abode of the Creator and his spirits, and of the souls of the blest; the Sun was the eye of the Creator and the light of the world; the Moon was the Sun of the night; the stars were damp-fires (*otsito*) in the land after death; the clouds were the abode of Uncle Thunder, and his blinkings were the flashes of lightning—the flaming arrows. The Iroquoian has assigned certain functions to some of the celestial bodies, the Sun, for example is his god of war, while the Moon was the Mother, whose benign influences ever benefited her children on earth. The Thunder vigilantly went up and down the earth destroying serpents and dragons that were bent on killing the children of men.

In our list 385 names were taken from those of 14 different bodies in the Heavens. Of this number the sky alone has contributed 239 names (183 male names, and 56 female); sun, 76 (55–21); moon, 15 (13–2); clouds, 10 (8–2); shadows, 5 (3–2); dawn, 5 (3–2); thunder, 5 (5–0); moonlight, 3 (2–1); northern lights, 3 (3–0); stars, 2 (2–0); mists, 2 (2–0); lightning, 1 (1–0); rainbow, 1 (1–0); rays of the sun, 1 (0–1); north, 2 (2–0). Under the heading of the Heavens, the most popular name is *Oronhyatekha*, "Sky-is-burning," borne by Brigadeer Milton O. Martin, of the Six Nations, Ontario.

## RELIGION, CEREMONIALS

The religious beliefs of the early Iroquois have been described in writings of the first missionaries who visited the country. Their accounts were colored with a semblance of prejudice depreciatory to the natives. These godly men—zealots of their own faith, in the fullness of their zeal, dealt uncharitably with those savages for their seeming depravity. They declared them to be without God, and pronounced them children of the Evil One. Yet, being creatures of a common Creator, they were heirs to a worship to some deity. The Iroquoian had his gods who were known, in Huron, as *Oki*, and, in Mohawk, *Otkon*, both meaning "Spirit." Cartier mentions, in his *Voyages*, 1535, that the natives (Iroquoians) he met on the banks of the St. Lawrence called their god "*Cudouagny*," and we offer as a modern version: "Gudonnhegwen," meaning "From whom one lives." From all this it is fair to conclude that the Iroquois had a Great Spirit whom he worshipped. But, like the biblical Greeks of old, he worshipped an unknown God. His form of worship perhaps would seem crude to us. He worshipped his god through dancing, accompanied with singing. At times, he offered human sacrifices to his god. In these horrible crudities, he was just another figment in the universal pattern of savage worship the world over, in the days of long ago.

Under the heading of *Religion and Ceremonials*, we find 79 personal names, derived from 5 different subjects. Under: drum, there are 47 names, of which 33 are for males, and 14 for females; song, 13 (4–9); dance, 12 (7–5); rattles, 6 (6–0); and god of war—m, 1 (1–0). Not included in this list is the theme of "Cross," distinctively Christian and of later days (10 names, 4 male, and 6 female). Tobacco is here omitted, and it is mentioned, under "Plants," 13 times.

## ABSTRACT TERMS

Personal names with abstract substantives as contents number in all about 739; 377 for males, and 362 for females. Yet the prevailing opinion is that the language of the Mohawks, for example, is devoid of abstract terms or words. As a Mohawk grounded in its language, the author is moved to state that such an opinion is groundless. Hundreds of terms in actual use today

show that abstractions here exceed in number those that are found in the European pattern. The word *ga-rih-wa*, for instance, has many-sided meanings. Alone, it is incorporated as a verb in no less than 450 different words. As a substantive, and shorn of context, it presents many problems as to its precise meaning. Often it is given as the equivalent in English of "affair," for want of better terms like "matter," "thing," "information," "concern," "news," "report," "gossip," and many others with a kindred meaning. This word in Mohawk brings out dilemmas, and has been responsible for the countless unsatisfactory interpretations of word-phrases that have *garihwa* in their composition.

The Mohawk, like its sister dialects, was not stocked with redundant vocabulary. When new ideas or articles appeared for the first time and had no name, the users of the language resorted to making new descriptive terms for them. What with his native ingenuity, and aided by the resourcefulness of his agglutinative language, he could with ease fashion new words out of familiar linguistic elements. The Iroquois were matter-of-fact folk. What their hands could not handle nor their eyes see, was magic to them. They did not burden their minds with it. When they could not apply a term to a new idea, their tongue remained silent.

Under the heading of *Abstract terms*, 630 personal names have been collected, 316 for males, and 314 for females—fairly evenly divided between the two genders. Under the word "voice" or "word" (these two words are synonymous and homonymous) number in all 257 names (103 male, 154 female); affair, 167 (116–50); name, 112 (57–55); mind or spirit, 12 (7–5); life, 10 (4–6); tale, 10 (6–4); marriage, 6 (0–6); manner, 5 (1–4); size, 5 (3–2); despise, 5 (0–5); happiness, 4 (4–0); invitation, 4 (2–2); punishment, 4 (3–1); regret, 3 (0–3); self-punishment, 3 (2–1); pity, 3 (0–3); law, 2 (0–2); victory, 2 (2–0); pet name, 2 (0–2); theft, 1 (female); want, 1 (female); rest, 1 (male); peace, 1 (male); luck, 1 (male); love, 1 (female); lonesome, 1 (female); presentiment, 1 (female); light, 1 (male); legend, 1 (female); interval, 1 (male); guilt, 1 (female); friend, 1 (female); envy 1 (male).

In keeping with the themes under this heading, may be quoted the following three names: Rev. Father J. Bruyas, *Ahsennase*, "New-name"; the late Bishop Forbes, *Dehonigonrathe*, "Bright-mind"; Chas. A. Cooke, *Thawennensere*, "Voice-descending-hither."

## DIVISION OF TIME

Under the division of time heading, there are 99 personal names, of which 56 are for males, and 43 for females. Day alone has 73 names (39 males–34 females); night, 15 (8–7); dawn, 5 (4–1); morning, 5 (4–1); and, yesterday, 1 (1–0).

One of the most prominent names in use under this heading is *Dayorhensere*, "Dawn," given by the Six-Nation chiefs to Duke of Windsor when he was Prince of Wales.

## SEASONS

To the Iroquois the year is called Winter, and is divided, indistinctly, into two seasons at the extremes in temperature, the Summer and the Winter. Spring and Autumn are vaguely apprehended as midseasons. They are lightly dismissed, and their name—Spring and Autumn—are of recent coinage by the early missionaries.

The preferred season for the Indian was the Summer. It was prodigal with its crop of fruit of all kinds, the growth of medicinal herbs, and the peeling of "tree skins" for his shelter and his watercraft. The Winter, on the other hand, provided ready and easy hunting, and the long nights favored social intercourse and pastimes. When asking how old any one is, the question is literally: "How many winters has he or she crossed?" When referring to months, the "moon," is used instead, thirteen to the year.

Only ten names are known under the above heading. Winter is credited with 7 (4 for males, and 3 for females), while Summer had only 3, all for males. *Othorege*, "North," is the name of Mr. Andrew Jamieson, of the Six Nations, a graduate of Guelph Agricultural College.

## PATH

Foot paths or trails provided the only means of communication overland, through the forest, known to the Iroquois. In the Winter, sleds were used over ice and snow.

The radical for path is *-haha-* or *-ha-*; it is the same in all the dialects. Its origin seems to be from *ka ha*, stride or step. Whatever kind of path they knew was considered important enough to be the source of many of their personal names, no less than 66. In allegory, the passage from life to the land of souls occurs over a *path* of enchanting peace and loveliness, where want is unknown.

### PARTS OF THE HUMAN BODY

The Iroquoian was not unmindful of the objects beautiful to the eye, such as the human body in its symmetry and poise. When he had given 279 names to his kith and kin after the names of 44 different parts of the body, he scarcely had left any unmentioned. Of the 279 personal names, 177 were given to men, and 102, to women. The body alone had 116 names (44–72); hand, 24 (18–6); head, 21 (18–3); face, 20 (16–4); leg, 19 (12–7); foot, 18 (18–0); neck, 18 (13–5); hair, 14 (8–6); scalp, 14 (13–1); palm of hand, 11 (5–6); back, 11 (8–3); nails, 9 (7–2); heel, 8 (8–0); teeth, 8 (4–4); nose, 6 (6–0); eye, 7 (5–2); ear, 6 (5–1); shanks, 4 (1–3); heart, 4 (4–0); muscle, 3 (2–1); mustache, 3 (3–0); blood, 2 male; elbow, 3 male; braided hair, 2 (1–1); shin, 2 (1–1); shoulder, 2 male; left hand, 2 (1–1); mouth, 2 male; skeleton, 2 (2–0); throat, 2 male; cheek, 1 male; fingers, 1 male; forehead, 1 male; sight, 1 female; toes, 1 male; eyebrow, 1 male; hunchback, 1 male; calf of leg, 1 male; frown, 1 male; waist, 1 female; rib, 1 male; buttock, 1 male; armpit, 1 male; bare legs, 1 male; Adam's apple, 1 male.

### WORMS, INSECTS

Out of nine appellatives, six are given after the generic name for worms. It has been a source of wonder why names are burdened with such unbeseeming content. Their prominence, it is believed, lay in the legendary history, that, once upon a time, these worms protected man from being annihilated by a deadly pestilence, and ever since the remembrance of their service has remained unforgotten. The cicada is the crier of Mother Corn; he is the announcer to mankind of the time when the ear of corn reaches the edible stage. The bee needs no introduction, it is known to mankind for its honey and for its industry. And the Hurons of Lorette still use, as a family name, Sioui or Tsiwæ—lousy.

Of the three insects mentioned, all the names are given to men, except perhaps the last.

### CLOTHING

Prior to the coming of Europeans, clothing for the Iroquois consisted wholly of skins and furs of animals. Reeds and husks of corn, as well as the inner bark of bass wood, were at times woven and used as covering. The skins of deer, moose, and bear were by far in greatest demand for raiment. The women prepared them by tanning and smoking; they also made the clothes, as well as prepared ornaments, to decorate the clothes. The ornaments were of porcupine quills and shells, the latter broken into small pieces which were then rubbed, smoothed, and perforated for stringing. The quills were dyed with dyes drawn from the barks and roots of certain trees or plants.

From 17 different parts of an Indian's clothing 157 personal names have been recorded; of this number, 97 names were assigned to men, and 60 to women. Skin had 46 names, 30 for men, and 16 to women; blanket, 28 (13–15); leather, 21 (10–11); moccasin, 17 (14–3); clothing, 14 (6–8); skirt, 7 (4–3); hat or headdress, 6 (6–0); garter, 4 (3–1); coat, 3 (3–0); belt, 2 (2–0); fringe, 2 (1–1); stocking, 2 (1–1); undressed hide, 2 male; fur, 1 male; rag, 1 male; cloth, 1 female.

### NATURE'S WORKS

These are not the handiwork of man, but of nature and wild animals: the beaver and muskrat huts constructed of mud and sticks, away from the haunts of man; cache, cave, den, or some hide-out, used for storing game or as a place for hibernation; and ditch, or an old abandoned water-course. These evidences of nature at work were familiar sights, and their familiarity abided with the Iroquois always. The memory of them constrained him to give some friend or relative a name after one of these features. So we have 13 personal names derived from them, and all but one are for men.

### HOUSEHOLD EQUIPMENT

The Iroquois mother or grandmother had objects ever near her from which to draw or replenish her repertoire of names for new member of her fireside. Here we have 18 different household objects that have contributed 84 personal names; of these 55 were given to men, and 29 to women. Bed or couch, 16 (5–11); bundle, 11 (8–3); sticks, 9 (4–5); fire-making apparatus, 8 (5–3); plank, 5 male; basket, 4 (3–1); dish, 4 (3–1); drying-rack, 4 male; cord, 4 (3–1); scaffold, 3 male; cradleboard, 3 male; shelter, 3 male; handle, 3 (2–1); bottle, 2 (1–1); fireplace, 2 (1–1); pole, 1 male; comb, 1 male; shelf, 1 male.

### FOOD

The Iroquois mother or housewife, under this heading, has had a choice of familiar themes as name content for name bearers. Perchance her

selection of a name was made easy by observing the antics of the candidate when in the presence of the food he is craving.

There are 28 names referring to 10 different kinds of food. Bread heads the list with 6 names (2–4); nuts with 6 (4–2); soup, 3 (2–1); fat of any kind, 5 (2–3); sugar, 2 male; food, 2 (1–0); flour, 1 female; meat, 1 male; salt, 1 male; pudding, 1 male.

### SOCIAL POSITION

Under this heading there are 6 names derived from 3 different positions: governor, 2, both given to men; chief, 2, both men; and slave, 2, both given to women. The Iroquois was not a stickler for social superiority or distinction. He was a chief without striving in competition, and he might be a man of character, a leader among men, and a wise counsellor. A slave was an outsider until adopted into a clan, after he had been taken into the tribe.

### TOOLS

Three tools are the subject of 29 personal names, 25 of them given to men, and 4 to women. Axe has 26 names (23–3); hoe, 2 (1–1); and hammer or mallet, 1, given to a woman.

In the word "axe," are included the hatchet, the tomahawk, and the stone *cache tete* (casse-tête). Three terms for axe are used: *atogen*, by the Mohawks and Oneidas; *ahsera*, by the Mohawks, Hurons, Onondagas, and Cayugas; and *osgwesont*, by the Senecas. These terms furnish the contents of the 29 names belonging here.

### ORNAMENTS

Only 13 personal names were derived from 4 different kinds of ornaments, 7 given to men, and 6 to women. Porcelain, 7 (4–3); beads, 4 (4–0); necklace, 1, men; earring, 1, men. In my boyhood days I used to admire the gaudy earrings worn by the men on our reservation. Today the men are left unornamented.

### SPORTS

Five names refer to 3 kinds of games: ball with lacrosse has 2 names, both given to men; snow-snake, 2, both to men; and game of straws, 1 is given to a woman. The games of skill are lacrosse, played out of doors in summer, and snow-snake, played out of doors in winter. The game of straws is a game of chance and is played indoors; it brings all the temptations of gambling. It used to be played at a wake chiefly to entertain the deceased, so it is claimed. The tendency to engage in a game of chance was strong among the Iroquois of the earlier days; and it has not altogether ceased to inure temptation.

### PERSONS AND RELATIONS

Some attention was given to naming after an object of their respect for persons and their relations. Here is manifested a desire to perpetuate the honor and memory of kins or friends. The old and the young, the matron and the virgin, the man and the fatherless were unforgotten. Respect for one another as a trait bespoke well for the tribe; by this bond a foundation for social betterment was being laid. One of the characteristics of the Iroquois was their loyalty to one another. It was one of the secrets of their superiority over the neighboring tribes.

Under this heading, and from 15 themes, we find 127 personal names, 94 given to men, and 33, to women. Troop or crowd, with 87 names, 68 for men, and 19 for women; young, 10 (4–6); family, 4 (3–1); person, 4 (4–0); boy, 2, male; woman, 2, female; daughter, 1, female; old age, 1, male; virgin, 1, female; married woman, 1, female; twins, 1, male; fatherless, 1, male; man, 1, male; female, 1, male; human being, 1, male.

### COLORS

Only three names bear on three colors, all of them masculine names. These colors are white, scarlet, and yellow, all three of them used as substantives. The same colors appear as adjectives elsewhere, and are dealt with accordingly.

### WATER

When dealing with kindred themes, under the heading of geographic features, water was overlooked. The three water subjects were spring (well), drop, and foam. They contributed 6 names, 5 male, and 1 female. A spring, 4 names, all given to men; drop, 1, male; and foam, 1 name given to woman.

### ELEMENTS

One of the most essential things in the life of the Iroquois was fire, both in domestic uses as well as in rituals. The radical for fire is *tsi-ra* or *tsista*, found in all the dialects of the Iroquois

alike. The word for star, "*tsista*," and the radical for family, *tsi-ra*, are the same as for fire. The group using the same fire-place in the long-house was the family. Smoke was used in various ways by the Indians. Ice to people who knew no bridge must have been a boon to those who had to journey over the water to remote places. Snow was so all-pervading during the winter, that its impact on Indian life must have been impressive.

Under this heading of *Elements* there are 204 names, 146 for men, and 58 for women. Fire, with 56 names, 45 for men, and 11 for women; ice, 52 (23–29); snow, 25 (20–5); smoke, 19 (16–3); snowflakes, 13 (9–4); wind, 12 (9–3); torch, 8 (7–1); rain, 5 (4–1); hailstone, 2 (1–1); flame, 8 (8–0); drops, 2, both for men; icicle, 1, male; and dew, 1, male.

## WAR

A warlike nation like the Iroquois may be expected to possess a hoard of names derived from war and incidents of war. Yet it is surprising to realize that only 27 names were had from that source. The Iroquois were not as bloodthirsty as they were painted by their enemies. They, it is true, relished such adventures as they met with on the warpath, while raiding and fighting. Fatalists as they were, the hazards of war had no deterring effect on their mettle in fighting. It was for this trait of theirs in fighting that their enemies were compelled to call them "the very demons."

The war-blood of the pristine Iroquoian went on rising to the surface even into our time. During the first Great War, the descendants of the old-time warriors formed two companies in the 114th Battalion for overseas, and the companies were staffed wholly by native officers, and they distinguished themselves in the field of battle. The spirit of adventure is as enthralling to the Iroquois of today as it was in the age of their forebears. But now the will to fight for these people has been diverted into channels of peace, and a goodly number of graduates from universities have turned to professional careers among their white contemporaries. They are a credit to their race and country.

Under the heading of war, there are 26 names, 22 for men, and 4 for women. War alone has 17, divided among the sexes, 15 to men, and 2 to women; fight, 5 (4–1); flight or escape from war, 2 (1–1); and, refuge, 2, both for men.

## WEAPONS

Weapons made of wood, such as bow and arrow, have already figured above, under the heading of *Plant Life*. But under the present heading, other non-wood weapons may now be mentioned. The Iroquois radical for bow is *henna*, meaning "bone"; it seems to imply that, in the beginning, the bow was made of the rib bone of a buffalo or some other large animal. This assumption is bolstered by the tradition that the forebears of the Iroquois long ago are believed to have come from the southwest in North America and migrated eastward across the plains where wood was scarce, but the rib bones of the buffalo were aplenty. The rib bones of deer or bear, excepting moose and elk, were not long enough to be effective in a bow for a hunter or warrior. Arrow in Mohawk was *gayengwire*, from *ohgwire*, "twig," or slim branch, or limb of a tree. War-club was *ojigwa*, knot of a tree or knob of wood, spear was *ahsigwe*, from "thing to pierce with." Blow-gun, *gahonre*, was the forerunner of the shot gun, and means "to blow breath." Shield was *onera* or *oneregwara* or *kaniewara*, "sheet of bark."

Nine different weapons are connected with names, giving no less than 68 personal names, of which 58 are for men, and 10 for women. The bow heads the list with 26 names (23 male, 3 female); arrows, 14 names (12–2); spear, 9 (9–0); war-club, 11 (8–3); blow-gun, 5 (3–2); shield, 1, male; sling, 1, male; and quiver, 1, male.

## NUMERALS

From 6 numerals have been drawn 104 personal names, 87 given to males, and 17 to females. These numerals are: two, with 58 names (47 males, and 11 females); one, with 17 names (9–8); twenty, with 25 names, all for men; three, with 2 names; eight and a hundred, with a name each, both given to men.

Two has the largest number of names, doubtless because it was the most familiar of all numerals. Among people who scarcely ever concerned themselves with enumeration, figures proved of little use. For the Indians knew little how to count beyond ten or even five. From the lack of terms for enumeration it would appear that the Iroquois had only a vague idea of numbers beyond the hundreds. The term for a hundred, *enniawe*, signified "*hand*," and "*many*," and this has the earmarks of a coinage by the

missionaries or the traders. The largest quantity explicitly known to the Iroquois seems to be twenty. It is called *dewahshen*, and means "two tens." This word is intriguing because of its original use and connection. Twenty was a prominent, as well as a sacred figure, among the Aztecs of pre-Columbian Mexico. And there is a claim that the ancestors of the Iroquois, in the distant past, came from the southwest. So the numeral twenty, among the Iroquois, may be linked somehow with that of the Aztecs of old, as a keepsake of their former migrations.

## ADJECTIVES

About 60 different adjectives went in to the making of 1,240 personal names. The following are among the most popular: small, *ah* or *ha*, with 177 names. This adjective has four meanings: small, sole (alone), caritative, and pertaining to. Good, *-iyo*, with 175 names; it has or used to have two meanings, but has lost one, big, and now signifies, good, only. Big, with 144 names, is found in variations of the word *-owa'n*, *-owane*, *-owa't*, *-owanen*, *-gowanen*, *-gowa* (used in personal names only), *-yesen*, and *-iyo*; this last formerly meant big, and good; now the latter meaning is exclusively used. Numeral has 104 names. Long, with 97 names, appears in a one-syllable suffix, *-es*, and also signifies deep. The adjective *-noron*, valuable, difficult, precious, is used in 55 names. New, *-ase*, has 49 names. White, 48 names. Bright, 46 names. Old, 25 names. Intensive, *-ji*, 27 names. Extreme, *-genyate*, 22 names. Full, *-ti*, 21 names. About 40 other names with adjectives are omitted here.

## ADVERBS

Ten adverbs are used in 234 names, and the most popular was between, with 35 names, while within and equally came second with 33 names each.

## ACCENTS

The place of accents in names and words differs according to the dialects of the Iroquois—the Mohawks alone have many instances of diversity among themselves, particularly among those living in separated localities. The Mohawk-speaking folk of Caughnawaga are quite distinct, in their use of accents, from those living on Grand River or the Bay of Quinte. The placing of accents among the Senecas, for example, is vastly different from that of the Mohawks, Since we are concerned with the Mohawk dialect in dealing with Iroquois names here, we will keep on with this dialect when dealing with the use and place of accents.

Scarcely any rule to determine the place of accents in any word could be laid down for the uninitiated in the Mohawk language. Yet it may be stated, after prolonged observation, that in four out of every five names, the accent is placed on the penultimate.

The number of names that have their main accent on the first syllable is 91 (44 names of 2 syllables, 47 of 3).

on the second, 1,158 (671 of 3, 466 of 4, 21 of 5)
on the third, 2,037 (1,691 of 4, 328 of 5, 18 of 6)
on the fourth, 1,978 (1,851 of 5, 126 of 6, 1 of 7)
on the fifth, 552 (536 of 6, 16 of 7)
on the sixth, 70 (68 of 7, 2 of 8)
on the seventh, 6 (6 of 8)
on the eighth, 7
on the ninth, 1 (1 of 10)

The number of names with the main accent on the second last syllable is 4,831.

## SYLLABLES

The length of personal names is reckoned by the number of syllables in it. When the name or word was committed to writing by the author, the spelling or lettering was done according to the "missionary" system long in use among the Iroquois, and following the English or French alphabet. To this was added recently the phonetic recording by Dr. Marius Barbeau of all the names pronounced by the author. Finally a tape recording on the Brush Sound Mirror was made at the National Museum of Canada.

In a collection of 6,218 names, the average length is five syllables, and when they are committed to "missionary" writing, they would require at least ten letters of the alphabet.

The following statement shows the length of names by syllables: with 2 syllables, 57 names; 3, 685; 4, 2,254; 5, 2,373; 6, 710; 7, 94; 8, 8; 9, none; 10, 1.

The longest name, with ten syllables, is: *De-wa-se-ri-ye-da-ne-gen-go-wa*, meaning "Big-cords-side-by-side." It comprises 21 letters, and is made up of: one prefix, *de-* (duality); a pronominal prefix, *-wa* ("it"); a verb radical *-seriye* ("entwined"); crement, *-da;* adverb, *-negen-* ("side by side"); adjective, *-gowa* ("big").

The long, cumbersome, Iroquois names and words, which are puzzling to fastidious non-Indians, are as a rule word-phrases or word-sentences, made up of various prefixes, pronouns, noun and verb stems, suffixes including an adjective, all coalescing into one unit. This accounts for the unwieldiness of many Iroquois names and words to outsiders.

## VERBS

The Iroquois, in olden times, was devoid of words to stabilize and standardize his language. He had no general terms for the different parts of speech, for instance, he had no word for "Verb," although no less than 500 verb-stems were used. Many of these are compound verbs—nouns and adjectives combined to form a new verbal element. In the sentence, "I sing," *de-wa-ge-rih-wá-gwen*, literally, "I-take-up-the-affair" ("affair" here meaning "melody"), the verb "take up" is combined with the substantive "affair." Coining compound verbs and verbalizing other parts of speech has been going on ever since the Iroquois came in contact with the Europeans. So that his stock of verbs or predicates today has increased and continues to multiply to meet the exigencies of the day, and the developments of civilization. The sphere of his former activities has gone down the trail of yesterdays, and a new era has revealed new vistas with promise for him and his people. With this vision the verbs that do something for him, take a new meaning. The small stock of verbs of his forefathers has partly gone into desuetude through misuse; they are now outdated and archaic.

I asked an illiterate Indian what was his definition of the "verb." After a moment, he replied, "It is that which tells what I do to somebody." This was his idea of the Indian's concept of the function of the verb, and near enough to it.

In prehistory, the Iroquois of necessity had a very limited fund of verbs such as referred only to his narrow activities. These consisted wholly in the occupational and communal chase, with inter-tribal, religious, and social activities, so that his words about what he and his fellow-tribesmen did were correspondingly circumscribed.

The etymology of some of his verbs is decidedly obscure, while others are clearly analyzable, particularly the compound predicates. The verb "to be" is profusely combined with nouns and adjectives to form a sentence. The kinds and properties of the English verbs, such as the "intransitive" together with "voice" and "mood," are so vaguely inferred in the proper nouns that they may be considered as non-existent, whereas tense, person, and number as properties of the verb, are most commonly in use. Irregular verbs happen only to indicate a change of time by the addition of suffixes.

Almost all the verbs incorporated in personal names signify action on the part of the pronominal subject, and the object usually is a noun or a pronoun.

The quantity and quality of verbs are enhanced by the addition, in many cases, of certain particles of verb. These particles of the verb confer much of the force, richness, and beauty on the language. They are quite numerous and varied in form, as will be shown in the following list:

1. The causative suffix—*tha*, the most in use of all the particles, as in *k'ko-wa-nen*—"I am great," we have, *k'ko-wa'na'-tha*—"I make great."

2. The instrumental suffix—*tha*. It is also used to give an instrumental sense; as from *ke-rí-yos*—"I kill" we get *ke-ri-yoh'-tha*—"I kill with such a weapon."

3. Coupled with the reflexive prefix *-tha*. With the reflexive prefix *-tat* or *-at* inserted before the verb, we have a simulative or pretentious form: *kat-go-wa-náh-tha*, "I make myself great."

4. The diminutive suffix from *-ha: kon-gwó-ha* —"I-am-a-little-of-a-man."

5. The augmentative suffix *-tsi* or *-ji: "gon-wa-ga-teń-tsi*—She-is-given-overmuch." It is also used to indicate "intensive." This is sometimes lengthened to *-tsi-hon* as in *"wa-ga-thon-te-tsí-hon"*—"I-hear-perfectly."

6. The *cis*-locative prefix *d-* or *da-* expressing motion towards the speaker, as in *da-ha-deń-ti*, "He-came or walked-hitherward."

7. The trans-locative prefix *ye-* or *ya-* indicating motion from the speaker, as in *"ya-ha-yá-gen-ne"*—"He-went-out-henceforth."

8. The locative prefix *d-*, or *da-* indicating that something has taken place, "there" some distance away, as in *da-hon-wá-ryo*,—"There-some-distance-away-he-is-killed."

9. The progressive suffix *-tie* or *ha-tie* is used to give the sense of proceeding, continuing, progressing, as in, "I am moving along"—*wa-ga-den-tyon-há-tie*. The addition of an *-s* to the

*-tie* adds the idea of plurality or diversity of acts; thus *wak-hia-ton-ties*—"I-go-on-writing-at-different-times-and-places."

10. The synchronitive prefix *sa-de-* expresses action occurring at the same time, as in "We-came" *-yoń-ge-non*; "We-came-at-the-same-time," *sa-de-yoń-ge-non*.

11. The habitual suffix *-kon* as in *ga-dá-dis*—"I-speak"; *wa-ga-da-tiakś-gon*—"I-am-talkative."

12. The reiterative prefix *s-*, as in *gat-ga-thos:* "I-see," "I-see-again," *sgat-ga-thos-*, "I-see-again."

13. The duplicative prefix *te-* or *d-* or *de-* expresses an action which affects two or more, as in *-te-i'-kiaks*—"I-cut"; we have *te-kiaks*—"I-cut-in-two."

The same form is used in speaking of acts done by organs of the body such as the eyes, the hands, which nature has made double. Thus: *te-ka-seń-thos*—"I-weep," is never used except in this form.

14. The motional suffix form is irregular, and can be learned only by practice. Thus from *ké-saks*—"I-seek," we get *ke-sak-hes*—"I-am-going-to-seek."

15. The attributive suffixes *-ne*, *-se*, *-ni*, expressing an action done for someone, as in *ga-dá-dis*, "I-speak," we get in *ga-da-dia-se-* "I-speak-for-some-one."

16. The frequentative suffixes *-on* or *-ons*, also other forms as in *khiá-tons*—"I-write." We have *khiaton-nions*—"I-write-many-things."

17. The privative suffixes of many forms all expressing the negation of the verb, as in *knió-tha*—"I-upraise," we get *knio-ta-gwas*—"I-remove-from-its-standing-position." "I-put-around-my-neck"—*ka-ní-tiaks*, we have: *ka-ni-tiah-si*—"I-remove-what-is-around-my-neck."

The verb *a-yé-ha-we*—"I-carry," has seven different terms in use among the Mohawks, as follows:

*a-yé-ha-we*—"I-carry-it-by-hand"
*a-yon-tgé-da-te*—(ditto) on-one's-back
*a-yon-tnen-sá-ren*—(ditto) on-one's-shoulder
*a-yon-ki-tar-ho*—(ditto) in-one's arms
*a-yon-den-né-ta*—(ditto) in-one's bosom
*ya-go-nhon-dá-tie*—(ditto) in-one's mouth
*ya-go-tyen-ha-tie*—(ditto) around-one's -neck.

## CLANSHIP

One of the very few instances I observed during my research among the Iroquois gave me some unease. I felt disappointed and unsatisfied to find an air of unconcern and uncertainty on the part of many of the Iroquois in their knowledge as to what clan each belongs. Outside the immediate influence of the Long-House religion, the interest in clanship is on the wane in every Iroquois community in Canada. Modern education and economics, with their stress, have combined to make a tremendous impact on the life of the Red Man. His language is disappearing. In about two generations more, I venture to predict, the use of the Iroquoian language will have dwindled almost to a vanishing point. Today about sixty-five per cent of the young of both sexes, instead of their Indian tongue, use English constantly, at home and abroad. Only the aged and the middle-aged still preserve their dialects, and they seem reconciled, with the air of the stoics, to see the inevitable passing of the old beliefs and usages, and laying the flattering unction to their souls, that what is scratched on the birch-bark of fate is "to be," and "must be." In addition the teachers and leaders in Christianity have looked on clan system with disfavor, and spoken disparagingly of it as a relic of paganism. The devout have acquiesced with the opinion of their leaders, that clan system is of no material use to them in the stress of modern life. With all these antagonistic forces, the Iroquois finds himself unconsciously estranged from the beliefs and practices of his ancestors. It is not surprising to find indifference and lack of knowledge in evidence among the present generation.

If a century ago, at the time when Hale and Morgan were gathering clan data from native informants living in the heyday of primitive practices, the Iroquois were found lacking unanimity on the subject, what could be said of the knowledge of modern Iroquois that came to him unchecked, and tattered and distorted through many relays. If confusion were in evidence a hundred years ago, we now find worse confusion, supplemented with indifference. Withal we have reason to be thankful to know that the Long-House religion is striving, as one of the tenets of its faith, to maintain the integrity of the clan system, at least among its followers. And then there are the diehards imbued with zeal for nationalism. For political reasons they constantly bring up the need of remaining true to the beliefs and usages of the ancestors. For a dream is cherished that a day is coming when the sons of *de-ga-na-wi-da* will get into their own

again as Masters of their former country. It was my privilege to labor among those who, having drifted far from the fires of their forefathers, still cling wistfully to meagre and cooling embers. I could not be satisfied with the offerings they gave me as bearing the earmark of authenticity. That is why some of the names submitted are without a clan assignment.

The etymology of the word *oh-dá-ra*—"clan" is *earth*. When asking others, "What-is-your-clan" they answer *oh-ni-sa-da-ró-ten*, literarily "What-is-your-earth?" (earth or any of its constituents). The Iroquois must have held the belief that man was as old as the earth. It seems also to coincide with the Biblical version that man was made of "the dust of the ground."

## USE OF METAPHORS

In orations as well as in conversations, the Iroquois were masters in the use of metaphors drawn from nature, to clarify and intensify the virtues or viciousness of the object under discussion. The principle of these are euphemism, hyperbole, homonym, and fantasticism, which are used to convey extravagance in the action implied in the meaning of personal names. The onomatopoeia is found mostly in the naming of fowls. Lastly, there is a prolific use of terms of ambiguity that has taxed the resources of interpreters and students. The diversity of interpretations given to names, in particular, is due to the dilemma confronting the interpreters of these ambiguous terms.

# THE BOAS PLAN FOR THE PRESENTATION OF AMERICAN INDIAN LANGUAGES

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IN the preface to the first volume of the *Handbook,* Boas stated unequivocally that there was "a general plan of presentation of grammar outlined by the editor" which the collaborators had adopted—"willingly adopted" (vi).[1] This "general plan of presentation of grammar" may have been privately outlined and discussed in detail between the editor and his collaborators. Our definite information is only negative: the plan is not published as such.

Boas' famous 83-page Introduction begins and ends with essays on ethno-linguistics, diffusional linguistics, and typology; and it includes in its middle portions a short exposition of phonetics besides a long exposition of the kind of grammatical terminology which was widely used up to and including the writings of Edward Sapir.[2] In more general terms, the middle portion of the Introduction is concerned with structural linguistics approached from the parameter of meaning.

One hesitates to say that Boas excludes all considerations of comparative linguistics in his Introduction. It seems fair to say, however, that the Introduction speaks of problems arising out of genetic relationships as either obvious or as impossibly difficult, and, at any rate, as of secondary interest in contrast to those areas which are of primary interest to Boas—ethno-linguistics, typology, structural, and diffusional linguistics.[3] Where cognates are found in a given linguistic area, a troublesome problem has to be faced—that of distinguishing between (1) those samenesses which can be accounted for by borrowing—the characteristic explanation of diffusional linguistics; and (2) those samenesses which are derived from a common ancestry—the characteristic explanation of comparative linguistics. Boas' comments on language families are both brief (in effect, a restatement of the Powell list for North America north of Mexico) and cautious. Thus, Boas will recognize a given language to be a sister language ("dialect") in a given language family only when cognates reach a certain unstated statistical fullness; he says, "where the older material [reflexes of the parent language] constitutes the bulk of the language [being tested], its close relationship to the ancestral tongue [the parent language] will be readily recognized" (p. 44; *cp.* p. 58); and where language relationships are not so readily, so obviously, so statistically recognizable, Boas turns to diffusional linguistics for explanations of the fewer similarities. Now in diffusional linguistics the great need is less for cognates among morpheme lists than for structural similarities among languages, whether related or not. This need accounts for Boas' unflagging interest in linguistic structures, and it also accounts for his masterful insistence on having linguistic structures so stated that they may be readily compared—one structure to the other structure—again, irrespective of whether the languages are related or not.

Let us assume that a long-range scholarly objective, including the target described above, was clearly visible to Boas when he negotiated with the Smithsonian Institution for the publication of a *Handbook of American Indian Languages* (numbered *Bulletin* 40 of the Bureau of American Ethnology) to appear in successive Parts, each Part to constitute a fat volume of a few to almost a dozen grammars. Part 1—the first volume—would be crucial to Boas' strategy in such a scheme. He could easily devise "a general plan of presentation of grammar" in order to obtain the kind of cross-genetic comparability essential for his long-range objective. This he did, and he announced the fact that he had done so in a not inconspicuous place in Part 1 of the *Handbook* (last line of the Preface preceding the Introduction). If the "general plan" could be actualized in the first volume of the *Handbook,* Boas must have

[1] Franz Boas, Handbook of American Indian Languages, Part 1, *Bur. Amer. Ethnol. Bull.* **40**, 1911: included are a Preface, an Introduction, and grammatical sketches of ten languages.

[2] A comprehensive review of Sapir's work in all fields of anthropology is given by Zellig S. Harris in *Language* **27**: 288–333, 1951; *cp.* particularly Sapir's linguistic usage, pp. 289 ff.

[3] Roman Jakobson congratulates Boas on having independently innovated this kind of linguistics in America as an unwitting parallel to the work of European scholars (*Internatl. Jour. Amer. Ling.* **10**: 188–95, 1944).

realized, it would serve as an exemplar for all successive volumes. But if persuading others to follow the "general plan" was indeed crucial for Boas' long-range objective, why did he refrain from publishing the "general plan" as a guide to his early collaborators? Had this "general plan" been committed to paper, it could of course have been subject to critical attack. But there is not the slightest evidence that the edited had any inclination to reject the editor's plan; nor is there any evidence to suggest that the edited had any general plans of their own to compete with the plan announced by the editor. Since most of the collaborators were the editor's graduate students—or else were independent scholars who nevertheless stood in either a student-like or disciple-like relationship to the editor whenever he spoke on matters of anthropological linguistics—it is probable that the interpersonal relationships in the collaborating group were generally favorable for following a single master plan.

Just how that master plan was communicated to the early collaborators—those who contributed to the first volume of the *Handbook*—is described neither by the editor nor by the collaborators, none of whom mention any indebtedness to Boas or give any statement of having been influenced by Boas—none except the final collaborator of the volume, Thalbitzer, who thanks the editor "for his kind and valuable assistance in the revision and finishing of this grammar." Now the fact is that Thalbitzer followed the Boas model only superficially and externally; the other collaborators share virtually all procedures in the internal organization of their various and diverse languages. If the editor went so far as to assist Thalbitzer not only "in the revision" but also in "the finishing" of the Eskimo grammar—which resembles the other presentations in externals only—what can we say about the nine remaining grammars which resemble each other in procedural organization as well as in editorial outline? To begin with, we can say that, in the first volume of the *Handbook*, the editor was the sole author of three out of nine procedurally parallel grammars (Tsimshian, Kwakiutl, Chinook); and that he appears on the title page as co-author of a fourth grammar (Dakota). Beyond this we can guess—rather than say definitely—that he went beyond the call of editorial duty in "assisting" the presentation of five other languages (Maidu, Fox, and Hupa, Tlingit, Haida [4]).

Boas bears a sort of inverse resemblance to Shakespeare in this context: some scholars are fascinated with seeking evidence to show that another person or other persons have written Shakespeare's plays; it would be equally interesting (and perhaps more possible in linguistics than in drama) to find internal evidence which might suggest that Boas wrote the grammars which are editorially attributed to another anthropologist or other anthropologists. There are peculiarities of technical terminology which appear in grammar after grammar in the first volume of the *Handbook*—peculiarities which were generally abandoned in the second and third volumes. For example, in morphology "composition" is used in a wide sense to summarize all linear morphemes which may appear in a word (as prefixes before stems, infixes within stems, and suffixes after stems) instead of in the usual narrow-sense use of "composition" for compounding—for sequences of (generally) two stems serving as a base for affixation. Or to take another example, in phonology "coalescence" is used as a sort of chemical metaphor for alternations and contractions occurring when an affix is juxtaposed to a stem. Sapir was evidently amused at this metaphor, for he poked gentle fun at it in the first grammar of the second volume of the *Handbook*.[5]

[4] The last three languages cited may be distantly related, but not in a conservative language family sense—indeed, all ten languages found in the first volume of the *Handbook* are, in this sense, genetically independent or, as Boas says, "distinct."

Hupa is twice described by the same author: once in the *Handbook* under Boas' influence (1911), and earlier than this in the *Univ. of Calif. Publ. in Amer. Archaeol. and Ethnol.* **3**: 1–344, 1905. A few contrasts follow showing the difference between Goddard's 1905 and 1911 version of Hupa—the changes to the latter possibly reflecting Boas' influence. (1) 17 vowels with data on clusters *vs.* 11 vowels; (2) morphology begins with nouns *vs.* grammatical processes followed by grammatical categories and then nouns; (3) noun cases concerning possessives and relation or position indicators *vs.* distinct treatment of possessive pronouns followed by locative suffixes; (4) remaining word classes treated before verbs *vs.* verbs treated before other word classes; (5) verb treatment begins with voice types (transitive-intransitive) *vs.* beginning with prefix types; (6) methods of modifying verbs including prefixes, infixes, inflection of preceding root, change in root and material on suffixes listed *vs.* clear contrast of prefixes and suffixes; (7) 4 classes of roots *vs.* 7 classes of roots; (8) prepositions *vs.* post position (same 25 morphemes); these and 5 types of adverbs, and various interjections treated after verbs in the 1905 treatment *vs.* particles, personal pronouns, possessive pronouns, adjective pronouns, numerals, 3 types of adverbs in the 1911 treatment.

[5] "It is generally said, in defining inflection, that languages of the inflectional as contrasted with those of the agglutinative type make use of words of indivisible psychic

Even if it were demonstrated that Boas phrased most of the grammars of the first volume of the *Handbook*, the presently recognized authors could still be said to have deserved their recognition, for they (in each case) gathered the linguistic materials through their own strenuous efforts in field work. If this were all they had done, the "author" would then be defined as "the person who had presented Boas a manuscript based on field work."

I hasten to add that the question here raised has bearing only on the understanding of procedural plan in the presentation of grammars in the *Handbook* series. Certainly, Swanton is the sole author of the Tlingit sketch in the first volume of the *Handbook*; by the same token, Boas is the sole author of a subsequent grammar on Tlingit because Boas subsequently had obtained Tlingit utterances from his own Tlingit informant and published his analysis separately.[6]

This may be, for some anthropologists, an obscure way of alluding to a delicate question which found its characteristic mode of expression during the heyday of field work—up to World War II—in the identification of field work and authorship. The writer remembers two personal experiences which can be explained only by this identification. Having concluded an analysis of Tübatulabal, he sought funds to work with Hopi, for what appeared to be a good reason—Hopi was supposed to be divergent from the general run of what were then called "Shoshonean languages" just as Tübatulabal was in its own way divergent. This did not seem to be possible. Though the point of departure for the projected work on Hopi was cordially recognized, it was immediately taken for granted that the project had to be abandoned since there already existed a potential author of a Hopi grammar (i.e., one who was then engaged in Hopi field work); the rule was: one author for one language.[7] The second experience is the converse of the first: the writer, then doing field work among the Shawnee of Oklahoma, was asked by an anthropological colleague for permission to visit a Shawnee ceremony—quietly and unobtrusively. Here the writer and his wife were the potential authors of a Shawnee ethnology—by virtue of being engaged in Shawnee field work. As late as the thirties, another anthropologist would seek permission to look at the tribe in question with delicate hesitation, much as one novelist might hesitate before asking another novelist to look at the other's still-being-composed manuscript. Of course, if the other novelist dies, we feel free to look at his manuscript. So also, if the other anthropologist belongs to a preceding century, we no longer make the identification of field work or field notes and exclusive authorship—for example, we are all agreed that Swadesh is not any the less the author of an Eskimo grammar because his work is based on an Eskimo dialect "as reported by Kleinschmidt."[8] The most recent device hit upon to distinguish clearly between both kinds of authorship—without weighting in favor of the one or the other—is that adopted by the *International Journal of American Linguistics:* the author of work based on field work is published simply under the name of the language, while the second kind of authorship is designated in the published title as "Structural Restatement of. . . ."

If Boas were writing today, we might feel that it was no more natural and fitting to have him appear as the author of Tsimshian, Kwakiutl, and Chinook (based on his own field work), and as the co-author of Dakota, than it was to have him appear as the author of *Structural Restatements of Maidu, Fox, Hupa, Tlingit, and Haida* (based on the field notes gathered by Dixon, Jones, Michelson, Goddard, and Swanton)—in short, to regard Boas as the author of nine out of the ten sketches of Part 1 of the *Handbook*.

I repeat, however, that the question here raised has bearing only on the understanding of the remarkable effectiveness of Boas' "general plan" and the unknown method or methods used for diffusing this plan from Boas to his collaborators in the first volume of the *Handbook*. Let me say explicitly that it has not been demonstrated that Boas phrased the grammars attributed to others in the first volume of the *Handbook*. Though I suggest this as a possibility, there is also evidence against

value, in which the stem and the various grammatical elements have entirely lost their single individualities, but have 'chemically' (!) coalesced into a single form unit . . ." (*Bur. Amer. Ethnol. Bull.* **40** (2): 53, 1922).

[6] John R. Swanton, Tilingit, an illustrative sketch (*Bur. Amer. Ethnol. Bull.* **40** (1): 159–204, 1911); Franz Boas, Grammatical notes on the language of the Tlingit Indians (*Univ. of Pa., Univ. Mus. Anthrop. Publ.* **8**: 1–179, 1917)—"the notes collected by me," says Boas (p. 7), "contain a sufficient number of new points to make the presentation of another incomplete grammar worth while."

[7] The Hopi Language, Toreva dialect, by Benjamin Lee Whorf, *in* Harry Hoijer and others, Linguistic structures of native America, *Viking Fund Publ. in Anthrop.* **6**: 158–183, 1946.

[8] South Greenlandic (Eskimo), by Morris Swadesh, *in* Harry Hoijer and others, Linguistic structures of native America, *Viking Fund Publ. in Anthrop.* **6**: 30–54, 1946.

it—evidence which historiography should take into consideration—namely, Boas' well known habit of being meticulously literal in all acknowledgments, both to others and in behalf of himself. Thus, he takes the trouble of pointing out—in his co-authorship with Swanton—just what part of the Siouan sketch Swanton wrote, what part he himself wrote, and the various sources on which each author based his contributions (field work, Riggs, Dorsey, Radin); further evidence along this line is found in the subsequent volumes, particularly in the Editor's Preface to Chukchee in Part II of the *Handbook* (p. 637) where we are clearly told (1) that the data on Chukchee are contained in a "manuscript by Mr. Bogoras"; (2) that this material is re-arranged by Boas; (3) that the responsibility is therefore Boas' for "the essential form of arrangement and presentation here given"; and finally, (4) that Bogoras took the trouble to O.K. or criticize Boas' "re-arrangement" which, in its final form, is not contrary to Bogoras' wishes.

Part II of the *Handbook* is devoted to four languages—three of these (Takelma, Coos, lower Umpqua), being the work of graduate students directed by Boas; the fourth is a work based on material collected by a Russian scholar who attained a full speaking knowledge of one Paleo-Siberian language (Chukchee). It is attested rather than merely possible that Boas was the author of a Structural Restatement of Chukchee—this is in accordance with Boas' own statements in his Editor's Preface (see above). Why did Boas give what was probably an enormous amount of labor to Chukchee? Why publish the Chukchee grammar among languages native to the New World? Probably in order to anticipate a desideratum formulated but never realized: "to give a comparative discussion of the languages at the close of these volumes, when reference can be made to the published sketches" (*Handbook*, Part 1, p. 82). We can be pretty sure that the comparative discussion would have been stated cross-genetically: in typological or diffusional linguistics rather than in terms of a common ancestry—and that the Paleo-Siberian languages would have been shown to share features with American Indian languages.[9]

[9] As a matter of fact, Boas' "re-arrangement" of Bogoras' Chukchee anticipates this; for example [in Chukchee and] "in many American languages, the relation between subject and predicate is conceived differently in the case of the transitive and of the intransitive verb" (pp. 682–683).

The two graduate students who contributed to Part II of the *Handbook* show every evidence of having been influenced by the organizational procedures of the grammars published in the first volume of the *Handbook*; and to have profited from their study under Boas whom they fully acknowledge. Since the author of the Coos and Lower Umpqua sketches (Frachtenberg) had no linguistic experience prior to his graduate work under Boas, he was unaware of the "ordinary rut of grammatical description"; he simply accepts the Boas plan as the one and only way of expressing his own "enthusiasm for the primitive languages of the North American continent," and his gratitude to Boas is touching.[10] The author of the Takelma sketch (Sapir) says that Boas "encouraged" him "to depart from the ordinary rut of grammatical description and to arrange and interpret the facts in a manner that seemed most in accordance with the spirit of the Takelma language itself" (p. 8).

Sapir's statement is our first notice of either a dilemma or a contradiction between the Boas plan and the Boas teleology. The "ordinary rut of grammatical description" is presumably one kind of plan; and while the master plan of Boas' may be superior to the traditional plan, it still remains a plan for the "presentation of grammar." The Boas teleology, on the other hand, seems to mean the investigation and presentation of patterns in a particular language irrespective of any "general plan." We return to this dilemma in the second section below (under Processes).

Part III of the *Handbook* is devoted to five languages—four of these were written by students under the direction of either Boas or of Edward Sapir in his Chicago days when he was still following the "general plan" devised by Boas. These four languages are Tonkawa, Quileute, Zuni, Cœur d'Alene (by Hoijer, Andrade, Bunzel, Reichard, respectively); the fifth language, Yuchi, was written by a German scholar (Wagner) who thanks Boas for his suggestions concerning the "elaboration and arrangement of the grammatical information" (p. 299).

The first installment of the fourth volume of the *Handbook* turns out to be the last in the series; it was Mary Haas' Tunica, a doctoral dissertation directed by Sapir in his Yale days. Anyone can

[10] Frachtenberg concludes his acknowledgment to Boas with saying, "the debt which I owe him in this and in a great many other respects will be of everlasting duration" (p. 303).

see at a glance that the Tunica sketch begins to reflect the influence of the so-called Yale School—e.g., it includes a full treatment of syntax. Sapir was the incomparably brilliant exemplar of the Boas plan—when he followed the plan. This he did both at Ottawa and Chicago; it was he who codified the orthographic usage which became standard for the Boas plan. When he went to Yale, however, Sapir began to work toward a new plan, and to abandon the old. This is reflected symbolically in his call for a revised orthography to which Boas at first refused to subscribe.[11] The present paper is not the place to show how Sapir and Bloomfield were related to the formulation of phonemics and combinatorial linguistics.[12] Generally speaking, our sample stops short of these advances; it comprises exactly twenty grammars appearing in four volumes of the *Handbook*,[13] all of which show some aspects of the Boas "plan" which we extrapolate from the score of grammars, omitting reference to the more recent influence of Sapir and Bloomfield in two or three of the last-to-be-published grammars.

## SOUNDS

Great diversity in the sound systems of American Indian languages was anticipated—perhaps hoped for—a half century ago. That, possibly, was one of the reasons why Boas refrained from writing out and publishing—that is, making too explicit—his general plan. He seems to have accepted any arrangement of sounds that a field worker brought to him—whether, for example, from back sounds to front sounds in vertical columns; or from front sounds to back sounds listed horizontally—as though any editorial tinkering might disguise the underlying differences among the aboriginal languages. But he did arrange or call for an arrangement to elucidate consonants in terms of a half dozen subtypes, in terms of contact points of articulation, and in terms of series; of course, Boas was interested in finding samenesses as well as diversities. As the record began to accumulate on the sound systems of native American languages, he would have noted that the samenesses in the sound systems were just as impressive as the differences; it is even possible that the samenesses would have ultimately tempted Boas to make his general plan explicit. Had he done so, he could scarcely escape writing somewhat along lines of the following exposition.

In order to make the *Handbook* charts comparable it is only necessary to rearrange some of them slightly so that all appear in the following left to right order: from front contact point (labial point of articulation) to successive back contact points (dental or dental alveolar, front palatal, mid palatal, velar, and glottis or laryngeal). Each subtype of consonant—stop, spirant, lateral, affricate, nasal, semivowel—can then be charted in terms of what the *Handbook* calls "series"—that is, components of a subtype, as for example voicing or glottalization. We can then say stops appear in one or two or three or more series—for example, with voiced component (as *b d g*); with zero component (as *p t k*); with glottalization component (as *p' t' k'*).

| | | |
|---|---|---|
| *b* | *d* | *g* |
| *p* | *t* | *k* |
| *p'* | *t'* | *k'* |

Generalized Model of Stops in American Indian Languages

When a given language, as Chinook for example, shows an asymmetry by lacking [*b*] as a phoneme, this is charted by placing a hyphen in the Chinook chart in place of *b* in the model above—the plan of presentation shows fully symmetrical charts and notes asymmetries within the charts by means of hyphens. But the *Handbook* charts are based on absolute phonetics rather than phonemics (relationships of sounds in reference to the particular system of a particular language); to convert to

[11] Herzog, Newman, Sapir, Mary and Morris Swadesh, Voegelin, Some orthographic recommendations, arising out of discussions by a group of six Americanist linguists, *Amer. Anthrop.* **36**: 629–631, 1934.

[12] C. F. Voegelin and Z. S. Harris, Training in anthropological linguistics, *Amer. Anthrop.* **54**, 1952.

[13] Ten languages appeared in the first group published as *Bur. Amer. Ethnol. Bull.* **40** (1), 1911: Hupa (by Goddard), Tlingit and Haida (by Swanton), Tsimshian, Kwakiutl, and Chinook (by Boas), Maidu (by Dixon), Fox (by Jones and Michelson), Dakota (by Boas and Swanton), Eskimo (by Thalbitzer).

Four languages were published in *Bur. Amer. Ethnol. Bull.* **40** (2), 1922: Takelma (by Sapir), Coos and Lower Umpqua (by Frachtenberg), Chukchee (by Bogoras).

The third group ("Volume III") consists of four languages published by the Columbia University Press (1933–1935) and a fifth language published by J. J. Augustin (1938): Tonkawa (by Hoijer), Quileute (by Andrade), Yuchi (by Wagner), Zuni (by Bunzel), Cœur d'Alene (by Reichard).

One language has appeared in "Volume IV" published by J. J. Augustin (1941): Tunica (by Haas); and Bunzel's Zuni has, by editorial oversight, "Vol. IV" on its title page, though paginated and dated for Volume III.

the latter it is only necessary to add the following requirement in the revision of the Boas plan of presentation: "a minimum of two series must be represented at a given contact point before an absence of consonant at the same point is counted as an internal asymmetry; when only one consonant is produced at a given contact point, the consonant is counted as an eccentric to the rest of the consonant subtype appearing in double or triple series." [14]

The *Handbook* charts show some languages to have one or two guttural contact points in addition to the one shown in our Generalized Model (as *q* besides *k*); and the guttural stops may in addition appear with a labialization component (as *kw* and *qw* beside *k* and *q*; or as *kw* only). To summarize the data from our twenty languages, so far as stops go: those appearing in triple series like our Generalized Model are represented at five contact points in Tsimshian, Chinook, Coos, and Kwakiutl; at four contact points in Haida, Quileute, and Cœur d'Alene; at three contact points with one guttural and one labial (Maidu, Takelma) or with two gutturals but lacking labial stops (Tlingit, Hupa). Those appearing without the voiced series or without the glottalized series of our Generalized Model—in short, in two rather than in three series—are represented at four contact points in Zuni and Lower Umpqua; at three contact points in Yuchi and Tunica; and in two contact points in Dakota, namely,

| | |
|---|---|
| *b* | *d* |
| *p* | *t* |

with the single palatal stop (*k*) as well as the glottal stop counted as eccentrics which flank a ($2 \times 2$) model. The remaining languages in the *Handbook* show the stop subtype in single series, 3 for Fox (*p, t, k*), 4 for Eskimo (*p, t, k, q*) and even more for Tonkawa and Chukchee.

It is possible, as the preceding paragraph shows, to summarize the diversity of the most diverse consonant subtype in a score of American Indian languages in less than a page—thanks to Boas' plan of presentation. This has been done in some detail in the technical paper already cited which, in turn, takes advantage of a few modern phonemicizations of languages previously included in the *Handbook*.

[14] C. F. Voegelin, Inductively arrived at models for cross-genetic comparisons of American Indian languages, *Univ. of Calif. Publ. in Ling.* 5, 1952.

It would be equally possible to do the same for other consonant subtypes. We can say that most languages show *lateral* subtype or, more broadly speaking, we can distinguish "liquid" from "lateral" to account for those few languages in our sample which include beside *l* also *r* phonemes—Tsimshian proper, Chukchee, Cœur d'Alene, Tunica; two languages lack both *r* and *l* phonemes—Fox and Santee Dakota (whose *d* corresponds to Teton Dakota *l*); and liquid allophones can sometimes be grouped into a nasal *n* phoneme. One language in our sample lacks all representation of *nasal* subtype—Quileute; two languages appear with a single nasal *n*—Tlingit and Yuchi; a few show three nasals (*m, n, ŋ*)—Hupa, Haida, Maidu, and possibly Zuni; all the rest have two nasals (*m, n*) except Eskimo which alone has four nasals, at labial, dental, palatal, and velar contact points. All languages except Eskimo are represented in the *affricate* subtype. Of the half dozen consonant subtypes discussed, only three are represented in every language—*stop, spirant,* and *semivowel.*

Intertype models show that more than half of the languages in the *Handbook* which are represented at guttural contact points in stop subtype are also represented at the same contact points in the spirant and nasal subtypes; less than half of the *Handbook* languages converge from two or more guttural contact points in the stop subtype to one contact point in the nasal, the spirant, or in the nasal and spirant contact points (namely, Haida, Lower Umpqua, Tsimshian proper, Zuni, Chukchee, Hupa).

So also, intertype models may be constructed for the laryngeal area and for the labial area. So also, for the region between the labial and guttural area, which may be tentatively termed the sibilant-shibilant-libilant area, where all languages in the *Handbook* show convergence from two or three distinctions made in the spirant subtype (as *s, š, ɬ*), and sometimes in the affricate subtype (as *c, č, tɬ*), to a single representative in the stop subtype or in both stop and nasal subtype (*t, n*).

The principle of charting vowels (and deriving vowel models from the charts) is the same as that involved in arriving at models for consonant subtypes and intertypes. But Boas insisted on following a continuous rather than a discrete linguistics; in effect, this often resulted in extraordinarily fine distinctions of vowel qualities, which were not generally grouped into discrete vowel phonemes. It is difficult to accomplish for vowels what was easily accomplished for consonants, though length

in vowels is treated as a discrete difference somewhat like components in consonant series. It would, of course, be possible to give a score for the vowels—for example, to note symmetries in long and short vowels. For Hupa, the score could be stated as $4(\cdot)+1=9$ vowels in order to express the fact that this language has one asymmetrical vowel (namely, *a* which appears short only, but four vowels (*i, e, o, u*) which appear in paired symmetry, both short and long; the score says 1(only short) plus 4(short) plus 4(long), making a total of nine vowels altogether. Scoring in the same way, we can say for Tsimshian $6(\cdot)+3=15$ vowels altogether; for Kwakiutl, $6(\cdot)+1=13$ vowels altogether; for Tlingit $3(\cdot)+1=7$ vowels altogether. But the "altogether" scores may represent three entirely different procedures and hence be non-comparable: (I) ungrouped allophones in some cases (probably Tsimshian and Kwakiutl); (II) a broad transcription which may or may not coincide with the actual vowel phonemes (Hupa); (III) a grouping or regrouping of allophones arrived at by checking statements made in the source against examples cited in the source (Tlingit [15]).

## PROCESSES

Boas urged his collaborators to demonstrate the continuum of speech in grammatical presentation. An honest effort was certainly made to represent speech as continuous activities rather than as discrete units. In the terminology of Boas' day, such representation of the continuum of speech is called "processes," generally with the restrictive "grammatical" placed before "processes." From the start there appears to have been serious difficulties in treating non-semantic "processes" separately from "grammatical processes," and—at the same time—in obtaining a presentation of grammar which is an analogue of the continuum of speech. A convenient fiction seems to have been adopted: non-semantic processes were treated as if clustering at one end of the continuum; "grammatical processes" as if occurring at the other end. This fiction is reflected in the *Handbook* grammars which characteristically segregate the processes as indicated—into those unassociated with "meaning"; and into those associated with "meaning." The latter alone were termed "grammatical processes." That the former are not literally clustered at one end of the continuum was, of course, known; that they are interspersed in actual speech among the grammatical processes was recognized in theory. Boas alone was comfortable in following this theory in practice—in mixing the kind of information discussed under **A-E** (below) with other kinds of linguistic behavior; the other collaborators were rarely persuaded to follow the theory in practice. The influence of Boas' example was slight, for the collaborators could scarcely escape having noticed that the practice of mixing (interspersing items from **A** to **E**—see below—among items from **F** to **K**) is always cumbersome, and sometimes results in unintelligibility.

We have here the crux of the dilemma or contradiction between the Boas plan and the Boas teleology. The latter says that the objective in writing grammar is to describe each language in terms of its own genius. The plan of presentation seems, appropriately enough, to be devised to implement the objective as stated: let each particular description be an analogue of the continuum of speech in each particular language. In practice, this means interspersing the description of non-semantic processes among grammatical processes (that is the way they occur in actual speech); and this results in complex statements which crowd out simple patterns. It is not attractive because it is not always intelligible.

Though the teleology clearly calls for a plan of presentation which will imitate the continuum found in speech, the actual implementation of the plan nevertheless—and inconsistently—makes a point in finding and segregating those behaviors of sounds which are accompanied by meaning from those which are not. We treat the latter first: briefly, and only in general orienting terms. In the spirit of the Boas plan, then, we go from **A-F** (non-semantic processes) to **F-K** (grammatical processes) without boundary line between the two.

(**A**) Information on replacement of one sound by another sound is given from the point of view of stimulus or direction (retrogressive or progressive), or is stated in terms of causation. Thus in

[15] The two small caps given by Swanton in the *Handbook* for Tlingit are grouped as one vowel phoneme which appears asymmetrically short only; two pairs of allophones (*i, e* and *o, u*) are grouped as two phonemes which appear symmetrically both long and short; finally, another vowel (*a*) is said to be long when "under the accent" and otherwise short, but this is not borne out by the texts which show the vowel in question to be both short and long, whether or not stressed. This result, as far as it goes, differs from Velten's and Boas' independent phonemicizations; the latter avoid the short phoneme (small caps) and distinguish eight separate vowel qualities instead of four qualities times two lengths: *Internatl. Jour. Amer. Ling.* **10**: 168, 1944.

Haida, when a voiced lateral (preceding a voiced sound) alternates with a voiceless lateral (preceding a voiceless sound), a law of euphony is invoked because the process of replacement in this language is extraordinarily regular.

(**B**) If the replacement is between the last sound of one element and a juxtaposed first sound of the next element, "contraction" is said to occur (and the replaced sound may differ from both the "last sound" and the "first sound"). This is a process which resembles a kind of addition (Tlingit $-A+i-=-e-$) in which the sum may or may not be longer than either of the figures added, and the quality of the sum may or may not be identical with the quality of either figure in the addition. Subtraction as well as addition may be involved in the "contraction" of adjacent sounds; thus, in Yuchi there is a loss of $-w-$ in the contraction of $a+we=a$ (*áwegwadjin > á·gwadjin *he said*).

(**C**) Information on the distribution of sounds is often given in statistical form ("most of the cases . . ." or ". . . are frequent initially") rather than in the form of complete inclusion for one type of distribution, with the excluded cases ("exceptions") reserved for another type of distribution. Consonant clusters are "almost unrestricted" in most North Pacific Coast languages; Tsimshian shows as many as five consonants in one cluster. In general, positive examples of what has been collected are preferred to patterns of limitations in the distribution of sounds. Some distributions, though infrequently found, as a transposition of sounds (metathesis), are nevertheless noted. A "law" or general causation may be invoked for frequent distributions, as when consonant clusters "result from" underlying compounds of a stem ending in any one consonant preceding a stem beginning in another consonant. Distribution of sounds is generally given as a non-semantic process—as in our treatment up to this point.

Various kinds of "meaning" as "sound symbolism" may be associated with consonant or vowel clusters. Takelma *s* before another consonant represents the way a folkloristic coyote talks; Hupa words in single vowels may "develop semivowels after themselves becoming diphthongs . . . in the past tense." Distribution of sounds (in clusters which mark meaning) is, by definition, "grammatical process," and is mentioned again below (under **I**).

(**D**) But not even "sound symbolism" is admitted in a process concerned with the "insertion" of a vowel or consonant (empty of meaning). In Haida an inserted voiceless lateral appears in certain sequences as a free variant of the same sequences without the lateral. In more than one language a consonant (glottal stop in Quileute, *t* in Fox) is inserted between certain morphemes which end in vowels before others beginning in vowels; conversely, a vowel (*a, e,* or *i* in Quileute, *i* in Fox) is inserted between morphemes which end in consonants before others beginning in consonants. In imitating English words, Quileute follows its native habits; thus ositi *house* is borrowed *os* plus native suffix *ti* and between *os* and *ti* there is "the insertion of the connecting vowel *i*."

(**E**) In addition to information about sounds (and their distribution replacement, contraction, and insertion), which is given for all languages, information on some languages is concerned with (1) overall characteristics of vowel production; or (2) general acoustic effects of the sounds as a whole or of the consonants in particular—in short, the cumulative sound effect of most or all sound classes in a given language. This latter information is so often given that it is tempting to extract the features mentioned (imprecise though they are in statement) and regard them as constituting an overriding process—a process which will serve to differentiate one language from another, whether or not the two are otherwise similar. For example, Hupa vowels are "formed with much less movement of the lower jaw and lips" than are English vowels; the acoustic result of this is that "the sounds are not open and clear, but muffled." A peculiarity of Tsimshian "is the doubling of almost every long vowel by the addition of a parasitic vowel of the same timbre as the principal vowel, but pronounced with relaxation of all muscles." Takelma holds an intermediate position between "the characteristically rough languages" (e.g., Chinook and Hupa) and "the relatively euphonious languages" (e.g., Maidu).

(**F**) Prefixation is a process which accounts for what happens within a span of speech bounded on one side by the onset of a "word," and on the other by the "stem" of a word. The prefixation process operates with units known either as "prefixes" (if there is a close relationship between them and the following stem), or as "proclitics" (if there is a loose relationship between such prior elements and either the following prefixes or the stem). Some languages lack prefixes (Kwakiutl, Eskimo, Quileute). In a sense, all others are prefixation languages; but the criterion frequently stated in

the *Handbook* grammars is less the presence of prefixation than the *importance* of prefixation as a process. This importance is determined by one or another or a combination of the following factors: (1) the absolute number of prefixes in a given language; (2) the use of prefixes in paradigms; (3) the use of prefixes in fixed relative order positions. Some languages show merely two prefixes (Lower Umpqua); some have a few or several more than this (Coos, Maidu, Fox, Tonkawa, Tunica, Dakota); all other languages in our sample show many prefixes or proclitics—up to the 226 given in an alphabetic list for Tsimshian. In many languages prefixes appear in replaceable sets (with one constant meaning for the set as well as variable meaning for each prefix in the paradigm). In the same and in other languages, prefixes are found in fixed relative order positions (but without a constant meaning for each position); this is especially noted for Hupa, Tlingit, Haida, Chinook, Zuni, Yuchi, Tonkawa. Hupa kinship and body part terms always include a prefix from the possessive person paradigm; for other nouns this is not obligatory but optional, and the possessive person paradigm is the only set of prefixes occurring in Hupa nouns—though half a hundred different prefixes may occur in verbs. In many languages, the identical paradigm which marks goal (when prefixed to transitive verb) differentially marks actor (when prefixed to intransitive verb), and differentially marks possessor (when prefixed to noun). Prefixes (in association with suffixes) mark person for both noun and verb in Fox. The maximum closeness between "prefix" and "stem" occurs when the latter is split apart, as it were, to surround the former (then renamed "infix"). Theoretically, a split stem might likewise surround a "suffix" which would then also have to be called an "infix." In their "non-surrounded" occurrences, affixes generally appear before rather than after the stem—hence, they could be classified as "prefixes" but not as "suffixes"—as in Dakota.

(**G**) Suffixation is a process which accounts for what happens after the "stem"—in the span of speech between the "stem" and the very end of the "word." The suffixation process operates with units known either as "suffixes" or "enclitics"—depending on whether the elements enjoy a close relationship ("suffixes") or a loose relationship ("enclitics") to each other and to the stem (or other suffixes) which they follow. The great question is whether suffixation is more important—equally important—or less important—than prefixation. If a language lacks all prefixes but has many suffixes, the answer is unequivocable; thus, Kwakiutl, Eskimo, Quileute. So also, when a language has relatively few prefixes (including few person paradigms) but very many suffixes (including many person paradigms); thus Fox, whose prefixed person paradigms mark number by suffixes. However, the relative number of suffixed elements is not the only criterion for rating the importance of suffixation; Hupa shows half a hundred prefixes, but a greater number of elements than this appear after the stem when the sum of verb suffixes (24), noun suffixes (15), and postpositions (25) is counted. Yet since the paradigmatic sets and the relative order positions are found only among prefixes, it is prefixation which is rated as the more important process for Hupa. So also, if the 43 locative adverb postpositions are counted in Tlingit, this language totals a greater number of elements in suffixation than in prefixation, though suffixes other than the locatives are relatively few (14) while prefixes are not only double this in number but also occur more frequently as members of paradigmatic sets. Haida shows about half as many suffixes as prefixes. Chinook shows no more than two or three suffixes in any one word, but up to six prefixes in sequence in a single word. Very few languages show an even balance for "importance" between prefixation and suffixation (perhaps Dakota and Chukchee). Most languages in our sample show a preponderance of suffixation over prefixation—for example, there are under fifty prefixes recorded for Cœur d'Alene, but over a hundred suffixes.

(**H**) Stem determination is a process which takes into account what happens in the span of speech between prefixes (or word initial, if there are no prefixes) and suffixes (or word final, if there are no suffixes). Once the stem is "determined," a meaningful label and an associated common denominator in meaning is ascribed to it. This job presented great difficulty when the language being treated appeared to lack a regular distinction between nouns and verbs—to share, perhaps, one general class of stems for both nouns and verbs (Kwakiutl, Chinook, Eskimo, Coos, Lower Umpqua, Quileute, Cœur d'Alene). Another great difficulty is presented when the meaningful theme is felt to be more than a minimum morpheme—one capable of further analysis (or perhaps, better, sub-analysis, or analysis pertaining to a former history). In the historical past,

Quileute may have had compounded morphemes. In Tonkawa "It is probable that the basic unit is a stem . . . that this stem is often modified . . . however, the theme is now the functional unit and has been so for a long time" (*Viking Fund Publ. in Anthrop.* **6**: 301, 1946). Most languages in our sample succeed in finding one or two classes of noun stems (as those which are free and those which appear only with possessive affixes); and they succeed also in distinguishing nouns from more than one class of verb stems (as active and stative—the latter marking meanings comparable to English adjectives). But in such noun *vs.* verb stem languages, there are often a handful of stems which overlap, and there is perhaps as much as a ten per cent overlap in the case of Athapascan languages like Hupa.[16] It is recognized that meaning is not a sure guide to stem determination, and that ambiguities can arise over prefix-stem and stem-suffix boundaries, as well as over boundary questions when two or more stems appear in sequence in one word. The latter is designated as a quasi-independent process (stem compounding) and more attention is devoted to stem compounding than to stem determination, although the treatment of stem compounding is chiefly concerned with what has been determined in the way of stem classes—as to whether a given language compounds two noun stems, two verb stems, a sequence of one noun and one verb stem, and so on. Some languages show one stem (and never more than one) in any given word. Such are Eskimo, Kwakiutl, Quileute—the three languages, interestingly enough, which also avoid prefixation. Most of the other languages in our sample permit compounding of two stems (or even three, as in Tonkawa for compounding nouns); sometimes the compounding is productive and free, sometimes it is restricted in one way or another (as in the juxtaposition of an active verb and an auxiliary verb in Tunica). Compounding is clearly a grammatical process when the fact of including two stems in one word marks some grammatical category lacking otherwise (that is, if the two stems were to appear in separate words of one utterance). When in Tsimshian "the verbal stem and its object form a compound word," the consequence is that not just any activity but specifically "habitual activity" is directed toward the object. Thus V (*to carry*) + N (*stick*) = *to be a stick carrier*; V (*to harpoon*) + N (*seal*) = *to be out harpooning seals*; V (*to carve*) + N (*box*) + suffix (*I*) = *I am a box carver*.

(**I**) As a grammatical process, modification without expansion (internal change) encompasses any change so long as the morpheme span is kept at a constant length, and so long as meaning is associated with the change occurring within the morpheme. The meaning may be marked by replacement of one vowel by another (vowel ablaut), or by one consonant by another (consonant ablaut), or by some such redistribution as transposing sounds (metathesis). Such modification, as a grammatical process, turns out more often than not to be internal to stems; descriptively similar or identical modifications in prefixes and suffixes are generally stated as the mechanical result of an adjacent stimulus and are treated as one or the other of the non-semantic processes (see **A-C**, above). Clear statements are made when the description is from the point of view of one process applied to one kind of prefix or one kind of suffix; as soon as the description is given from the point of view of meaning, however, all processes associated with the meaning are described or redescribed in the *Handbook* sketches, yielding crowded statements. To avoid such crowding, we should like to distinguish sharply between the process of modification without expansion and the process of modification by expansion (reduplication: see **J**, below). This desideratum is easier to attain for describing modification without expansion than for describing reduplication. That is to say, expansion which includes reduplication also—and frequently—includes an associated change in consonants and vowels or associated length or some other component of either consonant or vowel. Though less frequent, the latter may also occur alone—that is, without expansion—and mark some meaning as such. The so-called "diminutive and augmentative consonantism" of Chinook and Wishram shows that some morphemes express the diminutive when a constituent stop consonant is changed in one way (e.g., glottalized), but express the augmentative when the same stop is changed in another way (e.g., voiced). Some Takelma aspects are marked by vowel change alone, and the repetitive in Cœur d'Alene may be marked by glottalization alone, though associated reduplication is characteristic for both languages. Good examples are lacking to show that "accent . . . is a grammatical device which in Cœur d'Alene has been exploited to incredible lengths";

[16] C. F. Voegelin, A query on the nominal origin of verb stems in Athapaskan, *Internatl. Jour. Amer. Ling.* **17**: 80–83, 1951.

but it is well to be reminded that in a redistribution of stress (or tone) the length of a morpheme may remain constant. So also in redistribution between oral and nasalized vowels of a given morpheme; the latter is said to mark future tense in Yuchi—but again, good examples are lacking. In Tonkawa "The second person pronoun is expressed by adding one mora of length to the vowel of the preceding morpheme" (*Viking Fund Publ. in Anthrop.* **6**: 305, 1946); this could be regarded as modification without expansion if stated as the replacement of a vowel (having the value of one mora) by another vowel (having the value of two morae). The maximum morpheme modification without expansion occurs when one morpheme is replaced by a non-resembling morpheme of identical length, and when the meanings of the two are identical except for the specific grammatical category being marked. For English we might think of *is* (*he is*) and *am* (*I am*) and as a matter of fact a parallel kind of suppletion is found scattered in Tunica paradigms. What appears to be common in the American Indian languages of our sample is not so much suppletion in respect to an elaborate paradigm but rather the appearance of a sub-class (a mere handful) of noun or verb stems which are changed completely according to their association with singular or plural marking morphemes. Yuchi verbs meaning *to go, to be here, to be lost* show one stem after singular actor prefix, an entirely different stem after plural actor prefix. Zuni "Plurality of subject or object may be expressed by . . . the use of different and specifically plural stems." Cœur d'Alene has one stem for a single *flea* but shows complete stem change for plural *fleas*. Tsimshian likewise shows different stems for singular and plural, sometimes with the former having a more general meaning (*to kill*), the latter a more specific or specialized meaning (*to chop*).

(J) As a grammatical process, modification by expansion (reduplication) is more than the repetition of the whole or part of any morpheme (as prefix or stem or suffix): it is this plus the "meaning" marked by the process. The *Handbook* grammars often distinguish reduplication which is presently active from that formerly active and, presumably, formerly meaningful. Reduplication is never listed among the non-semantic processes in grammars following the Boas plan because former functions are assumed where present day meanings are unknown. The three chief statements about reduplication are concerned with (1) meaning, and (2) the class of morpheme involved, and (3) the part of the morpheme being repeated together with incidental changes and insertions. Over and over again meanings marked by reduplication suggest a sort of sympathetic magic: as a consequence of repetition in sounds, let there be a sense of plurality, a sense of distributive or literative repetition. In Haida, it is a continuative suffix which may be reduplicated (*he looks* with one suffix, but *he looks many times* when the suffix is *doubled*). In Dakota, an affix is never reduplicated—only the main stem is, and meaning depends on which class of stem is repeated (when the stem for *one* is repeated, the meaning is *a few*; reduplication of higher numbers means *in clusters of*, as *by threes*). In Kwakiutl there are a dozen suffixes which are not themselves repeated—but the stems preceding these suffixes are reduplicated. In Chinook one class of words (particles) can be freely reduplicated; syntactic words are said not to show productive reduplication; some 55 words designating birds, animals, plants, body parts, kinship terms, and material culture appear only in reduplicated forms—and many of these are sound imitative; innovations in acculturational times resorted to such reduplication, as the *time* being tapped out in a *clock* or *watch* (tintin), or as the word for *wagon* which makes a clicking noise as it goes along (tsíktsik). In Tunica, it is auxiliary verbs which are reduplicated. In Tonkawa, reduplication in verb theme marks repeated or intense action or plural subjects. Nouns for human beings mark plurality when reduplicated in Kwakiutl; distributive is marked in other nouns (as well as verbs); still other reduplicated nouns (with suffix) mark diminutive, and other reduplicated verbs (with suffix) mark *playful performance of activity*. Whenever numerous meanings are marked by frequent reduplication, this process is apt to be in association with another process (as suffixation or modification or infixation), as in Coos, Takelma, Quileute, and Cœur d'Alene. When a language lacks reduplication as a grammatical process (as Zuni, Hupa, Tlingit, Eskimo), an occasional morpheme may yet be found that is always completely duplicated. Reduplication, when used freely, is apt to be partial: the first part may be initially exfixed, the last part finally exfixed, or any part may be medially infixed—although there is sometimes a question as to whether a part of a stem is infixed from itself or whether an independent sound is introduced (e.g., the auxiliary vowel in Chukchee reduplication; the

diminutive $-y-$ in Quileute). Some languages favor exfixing the repeated part of a stem initially (as Kwakiutl), others exfixing finally (as Takelma), but nothing is more common than a single language showing more than one type of reduplication (four main types in Cœur d'Alene and in Takelma, five in Chukchee, seven in Quileute—all including medial infixation). The meaning, generally, is correlated with the morpheme class rather than with the type of reduplication. Salish languages like Cœur d'Alene are peculiar in that meaning is correlated with type of reduplication: initial exfixation of stem marks diminutive of noun, and diminutive of subject or object of verb; medial infixation marks one kind of transitional (*to be dry* > *it became dry*); final exfixation marks transition without outside agent (*to sit* > *he came into a sitting position—as a bird alighting*). Reduplication of Takelma verb stems have a meaning correlation of the Salish kind: medial infixation of a stem vowel forms the aorist; that of vowel and consonant marks the frequentative.

(**K**) Word order is regarded as a grammatical process when it marks meaning; when, for example, a noun functions as actor if it stands before a verb, as goal if it stands after a verb. Grammars written according to the Boas plan have been said to neglect syntax—this by critics who failed to observe that the plan was to define syntax in such a way as to make it coordinate with other grammatical processes. It turns out that most of American Indian languages are like Tonkawa in this respect: "Word order is grammatically negligible in differentiating between subject and object. . . ." It is only when word order differentiates one function from another that the "plan" would include it as a grammatical process. Data from syntax are combined with data from other grammatical processes to determine word classes in Tonkawa (*Viking Fund Publ. in Anthrop.* 6: 296, 1946): a certain "free theme" appears in word initial with noun suffixes ("and functions therefore as a noun"); in composition after a noun but with the same noun suffixes ("and functions therefore as an adjective"); before a verb without the noun suffixes ("functioning therefore as an adverb"). Word classes (as opposed to stem classes) are determined exclusively by syntactic function in Quileute. Detailed treatment is often given to syntactic particles (in Hupa, Tlingit, Kwakiutl, Dakota, Coos, Tunica, Cœur d'Alene); the syntactic particle so frequently initiates a collocation of words that it has been termed a "phrase initiator," but in Dakota the particle "indicating the function and membership of groups of words" appears after these "groups." Favorite word orders are: actor-goal-verb (Hupa, Haida, Zuni, Yuchi); and verb-actor-goal (Chinook); numerals precede nouns (Tlingit); adjectives follow nouns (Haida). This kind of syntax ("external" syntax) is sometimes contrasted to "internal" syntax (really word morphology): person marker follows verb stem in Haida, hence superficially reverses the syntactic rule of actor-goal-verb. In Fox (Algonquian), as in Tsimshian, a different syntax and a different morphology are employed when one goes from conversational style to narrative style: "All historical prose, every sentence that does not express the speaker's own immediate experience, is expressed in this mode . . . almost all introductory conjunctions are followed by the subjective mode." A distinction is made between languages whose words are clearly set off one from the other—as Quileute; and languages whose utterances are knit together so firmly that separation into words may even be arbitrary—for different reasons: in Kwakiutl, because there is "coalescence of syntactic particle and preceding word"; in languages abounding in proclitics or enclitics looseness in combination sometimes results in a shift of a given morpheme from suffixation (with a preceding word) to free form (between two words) to prefixation (with a following word). Sentence types are easy enough to derive from the morphologies of Handbook grammars; they are explicitly listed for a few languages, notably Tunica.

## MEANINGS

Though defined as marking meanings, grammatical processes could be stated without reference to the meanings which they mark. The next task in the Boas plan of presentation was the converse of this: to give "ideas expressed by grammatical processes" (and to do this with a minimum reference to the "processes" involved in marking the "ideas"). The favorite Boasian term for such "meanings" or "ideas" was "grammatical categories"; these held such a fascination for Boas that he could not wait for the evidence to be in before he began summarizing—in the Introduction to the first volume of the *Handbook*. This, in effect, constituted a kind of promisory note: a promise or prediction that we would at last obtain reliable data on the various Weltanschauungen as reflected in the various native languages of primitive man in the New World, and thus obtain an

attested contrast to the Weltanschauung derived from European languages. This promisory note has been reissued at regular intervals since Boas' day—by Edward Sapir, by Benjamin Lee Whorf, and, more recently, in papers which attempt to segregate what is strictly linguistic from what is not. The latter have acquired special new-field labels which may be listed in the order of their appearances: *ethno-linguistics* (a term congenial to anthropologists); *metalinguistics* (a term favored by pure linguists), *exolinguistics* or *psycholinguistics* (terms coined by psychologists interested in linguistics). Boas, however, would probably have rejected these attempts to create subsidiary fields or interdisciplinary areas or new disciplines; for him "grammatical categories" belonged inseparably with the rest of linguistic study.

What Boas recommended was a general statement on meaning for each language (susceptible to later comparative treatment)—a general, separate statement on grammatical categories which might be arranged under such major headings as (1) noun concepts (including case) and an estimate of how distinct the "nouns" are in each language or conversely how they merge with "verbs" into a neutral neither-verb-nor-noun class of concepts; (2) verb concepts, including the numerous subclasses of intransitives (as neutral *vs.* active), of transitives (as those for single *vs.* those for double goal), and so on; (3) syntactic concepts, which turn out often enough to be those marked by "particles" or other more or less indeclinable words; (4) person-voice concepts, which are often associated with more than one of the major word concepts noted (1, 2, 3 above) and hence should be separately summarized; so also (5) number concepts, which might be non-committal or might refer to singular, dual, and plural of "nouns," with a distinction between inclusive (*you* and *I*) and exclusive (*he* and *I*) for the actor or goal of "verbs" or the possessor of "nouns"; so also (6) time concepts, which in many American Indian languages are as closely associated with "nouns" (e.g., *my-used-to-be-house*) as with "verbs"; so also (7) mode-aspect concepts, which again are not restricted to "verbs"; so also (8) gender concepts, which in Algonquian, for example, distinguish two classes of nouns (animate and inanimate) but four classes of verbs (two classes of intransitive verbs, depending on the gender of the actor; and two classes of transitive verbs, depending on the gender of the goal); finally (9) direction or local relation concepts.

But Boas advised his collaborators to go beyond such a summary of grammatical categories; he advised them to distinguish sharply between obligatory categories and optional categories. The latter might include anything that would occur "in idiomatic forms of speech" while obligatory categories are defined as "only those parts of the sentence which . . . must be expressed" (Introduction, p. 43).

In the decade between the publishing dates of the first two volumes of the *Handbook*, the collaborators appear to have become relatively cool toward the idea of separate essays on grammatical categories, while Boas became more devoted: the "elucidation of the grammatical categories" is placed foremost; it has become "the principal object of the series of sketches." The first volume of the *Handbook*, containing the Introduction and ten grammars, was published in 1911; nine of the ten (all except that devoted to Eskimo) include a brief separate essay on "ideas expressed by grammatical processes." The second volume of the *Handbook*, containing four grammars, was published in 1922; two of the four include again a separate essay on "ideas"—but this does not really reflect fifty per cent collaborator enthusiasm for stating grammatical categories separately. One collaborator apparently refused to do this (Sapir); another collaborator (Frachtenberg) agreed to do this for both of the grammars which he contributed; we do not know what the final collaborator (Bogoras) would have decided had Boas not "re-arranged" his manuscript material for him—for a reason mentioned in Boas' dated preface (1921): "Since the principal object of the series of sketches presented in this *Handbook* is an elucidation of the grammatical categories found in the present condition of each language treated, I thought it best to re-arrange the material . . . in consultation with Mr. Bogoras, the final form being given to the description of the grammar in accordance with his criticisms and suggestions." The final form lacks a separate essay on grammatical categories.

The last group of collaborators, publishing a half dozen grammars in the *Handbook* series between 1933 and 1941, still cleave to "grammatical processes" for the most part; yet all (but one) divorce themselves from an independent treatment of "ideas expressed by grammatical processes." The faithful one is Gladys Reichard who gives us our final example of the separate essay on "ideas" (1938).

# LEXICO-STATISTIC DATING OF PREHISTORIC ETHNIC CONTACTS

## With Special Reference to North American Indians and Eskimos

MORRIS SWADESH

PREHISTORY refers to the long period of early human society before writing was available for the recording of events. In a few places it gives way to the modern epoch of recorded history as much as six or eight thousand years ago; in many areas this happened only in the last few centuries. Everywhere prehistory represents a great obscure depth which science seeks to penetrate. And indeed powerful means have been found for illuminating the unrecorded past, including the evidence of archeological finds and that of the geographic distribution of cultural facts in the earliest known periods. Much depends on the painstaking analysis and comparison of data, and on the effective reading of their implications. Very important is the combined use of all the evidence, linguistic and ethnographic as well as archeological, biological, and geological. And it is essential constantly to seek new means of expanding and rendering more accurate our deductions about prehistory.

One of the most significant recent trends in the field of prehistory has been the development of objective methods for measuring elapsed time. Where vague estimates and subjective judgments formerly had to serve, today we are often able to determine prehistoric time within a relatively narrow margin of accuracy. This development is important especially because it adds greatly to the possibility of interrelating the separate reconstructions.

Unquestionably of the highest value has been the development of radiocarbon dating.[1] This technique is based on W. F. Libby's discovery that all living substances contain a certain percentage of radioactive carbon, an unstable substance which tends to change into nitrogen. During the life of a plant or animal, new radiocarbon is continually taken in from the atmosphere and the percentage remains at a constant level. After death the percentage of radiocarbon is gradually dissipated at an essentially constant statistical rate. The rate of "decay" being constant, it is possible to determine the time since death of any piece of carbon by measuring the amount of radioactivity still going on. Consequently, it is possible to determine within certain limits of accuracy the time depth of any archeological site which contains a suitable bit of bone, wood, grass, or any other organic substance.

Lexicostatistic dating makes use of very different material from carbon dating, but the broad theoretical principle is similar. Researches by the present author and several other scholars within the last few years have revealed that the fundamental everyday vocabulary of any language—as against the specialized or "cultural" vocabulary—changes at a relatively constant rate. The percentage of retained elements in a suitable test vocabulary therefore indicates the elapsed time. Wherever a speech community comes to be divided into two or more parts so that linguistic change goes separate ways in each of the new speech communities, the percentage of common retained vocabulary gives an index of the amount of time that has elapsed since the separation. Consequently, wherever we find two languages which can be shown by comparative linguistics to be the end products of such a divergence in the prehistoric past, we are able to determine when the first separation took place. Before taking up the details of the method, let us examine a concrete illustrative instance.

The Eskimo and Aleut languages are by no means the same. An Eskimo cannot understand Aleut unless he learns the language like any other foreign tongue, except that structural similarities and occasional vocabulary agreements make the learning a little easier than it might otherwise be. The situation is roughly comparable to that of an English-speaking person learning Gaelic or Lithuanian. It has been shown that Eskimo and Aleut are modern divergent forms of an earlier single language.[2] In other words, the similarities be-

[1] See Radiocarbon dating, assembled by Frederick Johnson, *Mem. Soc. Amer. Archaeol.* **8**, 1951.

[2] Concrete proof of this relationship has recently been presented in two independent studies: Knut Bergslund, Kleinschmidt Centennial IV: Aleut demonstratives and the Aleut-Eskimo relationship, *Internatl. Jour. Amer. Ling.* **17**: 167–179, 1951; Gordon Marsh and Morris

tween Aleut and Eskimo are not accidental nor are they entirely due to diffusional influences of one language on the other; the nature of the similarities bears out the long-held inference that we have here distinct traces of what was in some earlier epoch a single language. To determine when the earlier single speech community separated into two, we use lexicostatistic calculation based on the percentage of like elements in test vocabularies of Eskimo and Aleut, and we find that about 2,900 years have elapsed since the common period of these now distinct languages.[3] Similar studies of Eskimo indicate that the dialects from Seward Peninsula in Alaska all the way to Greenland diverged from each other within a relatively recent period, not yet accurately calculated but probably in the last several centuries. However, the divergence between this group of dialects and those around the Yukon and at East Cape in Siberia is such as to indicate about 1,000 years of separate development.[4] By the use of these dates and others which can be calculated from the comparison of closely related dialects, one can learn much about the principal migrations and cultural influences in the prehistoric past of the Eskaleuts.

Lexicostatistic data must be coupled with other evidence, including that of archeology, comparative ethnography, and linguistic paleontology. The separate lines of study serve to verify or correct one another and to fill in details of the story. While no full correlated study of Eskimo-Aleut has yet been undertaken, the calculation of the time depth of the stock has already been in part correlated with archeologic evidence. Carbon samples obtained by Laughlin and Marsh from one of the earliest settlements on the Aleutians and subjected to laboratory tests of radioactivity were found to be about 3,000 years old,[5] practically coinciding with the independently obtained lexicostatistic date. This indicates that the forerunners of the Eskimos and the Aleuts belonged to the same community up to the time when the islands were first settled.

The time depth of Eskaleut may be combined with other relevant considerations to formulate some possibilities as to the prehistoric migrations into the New World. This requires the dating of various linguistic groups on both sides of Bering Strait and the correlation of the dates with the facts of geographic distribution. Since very little of this work has yet been done, we cannot discuss the implications in any completeness. We may note, however, that the Nadene stock seems to show a period of divergence that may be shorter than Eskimo-Aleut,[6] a fact which suggests that the Nadenes rather than the Eskaleuts were the last group to enter America. Both of these stocks are recent enough in the New World to make it logical that their nearest linguistic relatives are to be sought in Eurasia rather than in America. A time depth of no more than 3,000 years makes it likely that such linguistic relatives can be found. This consideration lends plausibility to the case for Eskaleut relationship with Uralaltaic and Indo-european and to the case for Nadene relationship with Sinotibetan.[7] A proper examination of these possibilities, using vocabulary statistics in coordination with the other lines of evidence would greatly illuminate the prehistoric peopling of the western hemisphere.

## DISCOVERY OF THE CONSTANT

The fact that fundamental vocabulary changes at a constant rate was discovered accidentally, but

Swadesh, Kleinschmidt Centennial V: Eskimo Aleut correspondences, *Internatl. Jour. Amer. Ling.* **17**: 209–216, 1951.

[3] Marsh and Swadesh, *Internatl. Jour. Amer. Ling.* **17**: 169, 1951. The time given in this article was 4,000 years, loosely calculated upon a retention rate of 85 per cent. The correction based on strict calculation at 81 per cent ± 2 per cent gives 2,900 ± 400 years; the way in which the corrected constant was determined is explained farther on in the present article.

[4] Calculated on the percentage agreement reported in Swadesh, Kleinschmidt Centennial III: Unaaliq and Proto-Eskimo, *Internatl. Jour. Amer. Ling.* **17**: 66–70, 1951.

[5] William Laughlin and Gordon Marsh, A new view of the history of the Aleutians, *Arctic* **4**: 75–88, 1951, especially p. 91. The exact carbon date is 3,018 ± 230 years.

[6] See Swadesh, Diffusional cumulation and archaic residue as historic explanations, *Southwestern Jour. Anthropol.* **7**: 1–21, 1951, esp. p. 14. The percentage of correspondence between Athapaskan and Tlingit indicates about 2,000 years of separation. The common period of Nadene would be somewhat older than this.

[7] See L. L. Hammerich, Can Eskimo be related to Indo-European? *Internatl. Jour. Amer. Ling.* **17**: 217–223, 1951; Robert Shafer, Athapaskan and Sino-Tibetan, *Internatl. Jour. Amer. Ling.* **18**: 12–19, 1952. Both these papers have the shortcoming of dealing with a single branch of a compared stock rather than the entirety. Although the results are nevertheless significant, it would be better to deal with Nadene as a whole, including Tlingit and Haida as well as Athapaskan, and Eskaleut rather than merely Eskimo. In the latter case, there is every reason to suppose that an even closer relationship will be found with Uralaltaic, as suggested long ago by R. Rask (see William Thalbitzer, The Aleut language compared with Greenlandic, *Internatl. Jour. Amer. Ling.* **2**: 40–57, 1921–1923, esp. p. 40).

carbon dating was the specific stimulus for the research which brought it forth. For it was the achievements of radiocarbon dating which led the author four years ago to undertake studies of rate of vocabulary change. His only expectation at that time was to find an approximate maximum rate of change. At the Viking Fund Supper Conference for Anthropologists on March 12, 1948, he presented a paper on "The Time Value of Linguistic Diversity," which showed the value of such an approximate measure of vocabulary change. The abstract of that paper, reproduced in mimeographed form by the Viking Fund, reads in part as follows:

> If comparative linguistics have not been systematically exploited for time scale in studies of culture prehistory, it is probably because comparative linguists have generally been satisfied with vague relative chronologies suitable for their own purposes and unconnected with other aspects of culture history. However, the basis exists for absolute chronology—approximate, of course, but very valuable when added to other lines of evidence.
>
> "The greater the degree of linguistic differentiation within a stock, the greater is the period of time that must be assumed for the development of such differentiation" (Sapir, *Time Perspective*, p. 76). Though the rate of change is not constant, there is definitely a maximum. Also a normal rate can probably be determined that holds good when applied to extended time periods. These questions can be studied with controlled material, available in such stocks as Indo-European, Semitic and Sino-Tibetan, where historical materials are abundant and go back as far as 6000 years. The time-diversity scales thus established can then be used in the many other situations where historical materials are lacking but where comparative linguistics has proven the common origin of two or more languages.
>
> An index of vocabulary diversity should be based upon lists of words (or morphemes) that are relatively neutral in their cultural implications, so as to avoid the transforming effects that accompany rapid cultural change. . . .
>
> Each application of an index gives a minimum indicated time. Where two indices give different minimum times, it is obvious that the longest minimum is the nearest correct.

The author's assumption at this time was that "the rate of change is not constant" but "there is definitely a maximum." This belief was based on the well-known fact that languages change slowly, even at their fastest. On the other hand, it was generally believed in linguistics that some languages change much more slowly than others and in fact practically remain unchanged for thousands of years. It was not till later, after making actual measures of rate of change in supposedly slow-changing languages, that the author discovered this notion to be illusory.

Thus the first study of rate of change in fundamental vocabulary was based upon the idea of finding a useful measure of change other than a constant. On these terms, the first small experiment presented to the Viking Fund Conference consisted of comparing the percentage of agreement in Nootka-Kwakiutl with that in English-German. In the former pair, American Indian languages comprising the Wakashan stock of the northwest coast, there were about 30 per cent of cognate elements in the test vocabulary, while English and German have about 59 per cent in common.[8] This indicates that the Wakashan stock has had a much longer period of divergence than have English and German. Since we know the time in the latter case to be a few centuries more than 1,100 years, we gain some approximate notion of how great is the time depth of Wakashan. In this way historic knowledge serves to clarify prehistory.

In the fall of 1949 the author, with the support of the Phillips Fund of the American Philosophical Society and making use of the excellent collection of Salish manuscripts in the Franz Boas Collection of the Society's Library, undertook an objective classification of the languages in this ramified stock based upon vocabulary similarities. He used a test list of fundamental lexical items along the lines of his earlier work and chose as the unit for the scale of agreement and divergence the percentage of retained words in present-day English as compared with Old English of 1,000 years ago. This was considered at first merely as a convenient concrete unit, as a statistical convenience. However, as the study progressed, it was seen that the results showed remarkable inner consistency. For example, Bella Coola, the most divergent of the Salish languages, showed percentages of agreement with the twenty-five other languages all within the narrow low range of 11 to 23 per cent. In all cases where high percentages of vocabulary agreement were found, the languages are closely similar in structure also and are so situated geographically as to bear out the likelihood that they have separated from each other only in a relatively recent

[8] In the conference paper, the author calculated 31 and 65 per cent, with a test list and a scoring technique both slightly different from the present ones.

epoch. Nowhere in all this ramified stock were correspondences found that implied the occurrence of changeless or nearly changeless languages. On the contrary, the indications were that all the languages had changed their essential vocabularies at something like a constant rate.

This development in the Salish study demonstrated the need for further studies of languages of known history. By the time that "Salish Internal Relationships" appeared in print,[9] though not soon enough to be incorporated into the article, the author and several colleagues had made a series of such studies. Gradually the evidence accumulated showing that universal everyday vocabulary, words of the type comprising the test list, changes at a roughly constant rate. Some weaknesses in the test list were disclosed, but the essential truth of the constant shows through despite them. Certain methodological problems were encountered, but none for which the solution has not also been found. These matters are discussed in later sections of this paper.

Valuable work on the statistical analysis of lexicon dating has been done by Robert B. Lees of the University of Chicago.[10] His studies have already provided reassurance on a mathematical basis that the constant is real, that the number of historical cases is already sufficient to eliminate the possibility of chance; and he is now working out the problems of calculating the deviation error of the method. In the meantime new studies of problems of prehistory have been carried out, including those of Eskimo-Aleut already mentioned. Joseph H. Greenberg and the author, aided by a grant from the Columbia University Social Science Research Fund, have used the method with excellent effect in studies of several linguistic stocks in Africa, Australia, and America.[11] In the course of these various studies, some new applications of lexicostatistics were found. These included a technique for distinguishing between archaic residue and diffusional accumulation,[12] and a method for demonstrating remote genetic relationships.[13]

[9] *Internatl. Jour. Amer. Ling.* **16**: 157–167, 1950.

[10] See Robert B. Lees, A method of dating with Lexicon statistics, p. 3 (mimeograph edition of a paper read at the Michigan Linguistic Institute 1951).

[11] Already complete Joseph H. Greenberg, The genetic classification of Australian languages, paper presented at 1951 Annual Meeting of the Linguistic Society of America.

[12] Swadesh, Diffusional cumulation and archaic residue as historical explanations, *Southwestern Jour. Anthropol.* **7**: 1–21, 1951.

[13] Presented as, An experiment in remote comparative linguistics, in the 1951 meeting of the Linguistic Society of America. The method will be published in connection with a paper on the Mosan stock, now in preparation.

## RETENTION RATE

Of the three main aspects of language—sounds, structure, lexicon—the third lends itself best to the requirements of a statistical time index. Though words are readily borrowed, it has long been known that the borrowings take place primarily in the "cultural" part of the vocabulary and that the "intimate" vocabulary resists change. It was not difficult to form a list of about two hundred relatively stable lexical items, consisting of body parts, numerals, certain objects of nature, simple universal activities. A simple clear-cut criterion of what constitutes a change could be set up, namely, the substitution of a new element from whatever source as the most usual everyday expression of the given notion. In comparing two time periods of a given language or two languages developed out of the same earlier language, the agreement could be stated as a percentage of cognate elements in the total number of items compared. The retention index could be calculated in terms of some convenient time period, say millennia or centuries, so as to enable one to compare the different cases with each other. The first two counts made by the author were present-day English as compared with Old English and modern Spanish as compared with classical Latin. The method of comparison is illustrated here with the first ten items in the list:

| Old Eng. | Mod. Eng. | Cognates | Latin | Spanish | Cognates |
|---|---|---|---|---|---|
| eall | all | + | omnēs | todos | − |
| and | and | + | et (or −que) | y | + |
| dēor | animal | − | animal | animal | + |
| æsc | ashes | + | cinis | cenizos | + |
| æt | at | + | in | a | − |
| bæc | back | + | dorsum | espaldo | − |
| fūl | bad | − | malus | malo | + |
| rind | bark | − | cortex | corteza | + |
| belg | belly | + | venter | vientre | + |

The semantic criterion is applied strictly. Although the word "deer" is still used in modern English, it is no longer the general word for "animal" but refers to a definite category of animals and a new word of Romance origin has taken over its old function. Similarly modern "rind" no longer refers to the bark of a tree, and "bad" rather than "foul" is now the everyday expression

corresponding to Old English fūl. Consequently these cases are scored as non-correspondences. On the other hand, normal phonetic changes (e.g., belg to belly) and structural modifications (e.g., the use of a new affix, as in cenizos) are disregarded. Applying this procedure to the entire test list, the agreement between Old and modern English was found to be 85 per cent. Between modern Spanish and classical Latin, the correspondence was 70 per cent. The elapsed time period in the first case was about 1,000 years, in the second case 2,000 years. Now, if after 1,000 years 85 per cent of the original vocabulary still remains in the same function, then in a second thousand years a similar retention rate would give 85 per cent of the 85 per cent still existing at the beginning of this second period. In other words, 2,000 years at the English rate would leave 72 per cent, a little more than the Spanish retention after such a period. The Spanish retention corresponds to a rate of a little less than 84 per cent per 1,000 years. The rate of retention is thus practically identical in these two cases.

In order to determine whether the rate of retention is always constant, it is necessary to examine a number of cases where the vocabularies of two periods of the same language are known and the elapsed time is also known. A number of suitable instances are available for study. Since the time intervals are generally not simple multiples of each other, it is convenient to use logarithms to reduce all the cases to a standardized time period such as 1,000 years. The mathematics can be expressed by the formula:

$$\log r = \log c \div t.$$

That is, logarithm of the retention per 1,000 years in per cent equals logarithm of common vocabulary per cent divided by number of time periods.

Tests of rate of retention have been made for several languages by different scholars with the following results.[14]

| | % per 1,000 years |
|---|---|
| Middle Egyptian 2100–1700 B.C. to Coptic 300–500 A.D. (C. Baer) (calculated as 23 centuries) | 76 |
| Classic Latin 50 B.C. to present-day Romanian (E. Cross) | 77 |
| Old High German 850 A.D. to present-day German (G. J. Metcalf and R. D. Lees) | 78 |
| Classic Chinese 950 A.D. to modern colloquial North Chinese (C. Y. Fang) | 79 |
| Latin of Plautus 200 B.C. to French of Molière 1650 A.D. (D. A. Griffin) | 79 |
| Dominica Carib of 1650 to present-day (D. Taylor and M. Swadesh) | 80 |
| Classic Latin 50 B.C. to present-day Portuguese (E. Cross) | 82 |
| Koiné to present-day Cypriote (E. Hamp) | 83 |
| Koiné to present-day Athenian (E. Hamp) | 84 |
| Classic Latin 50 B.C. to present-day Italian (E. Cross) | 85 |
| Old English 950 A.D. to present-day English (M. Swadesh) | 85 |
| Latin of Plautus 200 B.C. to Spanish of 1600 A.D. (D. A. Griffin) | 85 |

[14] See Lees, *op cit.*

The reasons for variation in the rate of retention need to be considered in detail, but the amount of variation, from 76 to 85 per cent, is relatively small. For the purposes of studying reasons for variation it would be desirable to obtain the counts for a much larger number of cases, but the number of examples given here is already sufficient to eliminate the possibility of sheer coincidence in the close agreement of the retention indices.

## THE TEST VOCABULARY

The lexical test list used for studying rate of change consisted of 215 items of meaning expressed for convenience by English words. In some cases, where the English word is ambiguous or where the English meaning is too broad to be easily matched in other languages, it is necessary to specify which meaning is intended, and this is done by means of parenthetic additions. If it is understood that normal everyday meanings rather than figurative or specialized usages are to be thought of, complicated notes are not necessary. The list, minus 15 items recommended for omission and with one other change, is as follows:

all (of a number), and, animal, ashes, at, back (person's), bad (deleterious or unsuitable), bark (of tree), because, belly, berry (or fruit), big, bird, to bite, black, blood, to blow (of wind), bone, breathe, to burn (intrans.).

child (young person rather than as relationship term), cloud, cold (of weather), to come, to count, to cut, day (opposite of night rather than time measure), to die, to dig, dirty, dog, to drink, dry (substance), dull (knife), dust, ear, earth (soil), to eat, egg, eye.

to fall (drop rather than topple), far, fat (organic substance), father, to fear, feather (larger feathers rather than down), few, to fight, fire, fish, five, to float, to flow, flower, to fly, fog, foot, four, to freeze, to give.

good, grass, green, guts, hair, hand, he, head, to hear, heart, heavy, here, to hit, to hold (in hand), how, to hunt (game), husband, I, ice, if.

in, to kill, to know (facts), lake, to laugh, leaf, left (hand), leg, to lie (on side), to live, liver, long, louse, man (male human), many, meat (flesh), mother, mountain, mouth, name.

narrow, near, neck, new, night, nose, not, old, one, other, person, to play, to pull, to push, to rain, red, right (correct), right (hand), river, road (or trail).

root, rope, rotten (especially log), to rub, salt, sand, to say, to scratch (as with fingernails to relieve itch), sea (ocean), to see, seed, to sew, sharp (as knife), short, to sing, to sit, skin (person's), sky, to sleep, small.

to smell (perceive odor), smoke (of fire), smooth, snake, snow, some, to spit, to split, to squeeze, to stab (or stick), to stand, star, stick (of wood), stone, straight, to suck, sun, to swell, to swim, tail.

that, there, they, thick, thin, to think, this, thou, three, to throw, to tie, tongue, tooth (front rather than molar), tree, to turn (change one's direction), two, to vomit, to walk, warm (of weather), to wash.

water, we, wet, what? when? where? white, who? wide, wife, wind, wing, to wipe, with (accompanying), woman, woods, worm, ye, year, yellow.

Sixteen items used in the studies but which are unsatisfactory for many language groups are: brother, sister, six, seven, eight, nine, ten, twenty, hundred, clothing, to cook, to dance, to shoot, speak, to work, to cry. One item, to speak, has been replaced by a near synonym of higher normal stability, to say; and one word, heavy, has been added to bring the lists to an even 200. There may be reason for questioning some other items in the list, but the more serious defects are probably contained in the seventeen items now recommended for deletion or change. For the time being it is recommended that studies continue either with the original list or with the slightly modified list so that new results will be comparable with those previously obtained. The same applies to possible additions, since any major lengthening of the test vocabulary would require recalculating the index of the constant.

Suitable items for a test list must be universal and non-cultural. That is, they must refer to things found anywhere in the world and familiar to every member of a society, not merely to specialists or learned people. Moreover, they must be easily identifiable broad concepts, which can be matched with simple terms in most languages. Of course, it would be impossible to devise a list which works perfectly for all languages, and it must be expected that difficult questions will sometimes arise. This can, however, be very simply met by omitting the troublesome item when necessary. The rules for filling in the list for each language may be stated as follows: (*a*) Try to find one simple equivalent for each item by disregarding specialized and bound forms and the less common of two equivalents. (*b*) Use a single word or element rather than a phrase, even though the meaning may be broader than that of the test item. (*c*) Where it is impossible to find a single equivalent, omit the form.

It is doubtless possible to devise a better test list than the present one, but from the author's own experiments along these lines it is not too easy. Many notions seem suitable but are difficult to match in some languages because of structural peculiarities; thus the locative relations, like behind, above, beneath, etc. Many promising items turn out to have finely subdivided ranges of meaning in certain cultures, e.g., to work. It is therefore suggested that an objective method may solve the problem. A long list of possible items may be tried for a number of languages chosen for their diversity, and each item scored as to how often it can be easily matched. Only those which can be matched unambiguously in most languages are suitable. The stability of the items also needs to be objectively tested by noting how often and for how long they are retained in a number of historically known situations. A stability score for individual items could be calculated, and this score taken into account in constructing the improved test list. Presumably the variation in the index of retention would be reduced by having a better test list, but we do not know to what extent the present variability can be reduced by such improvements.

An obvious way to improve the test list, if possible is to make it longer. However, once one has two hundred test items, it takes several hundred more to improve the statistical adequacy of the test in any marked degree. Considering the difficulties of finding universally suitable words for a test vocabulary, it can hardly be hoped that a list of more than about three hundred items could be devised. Even this extension would be worthwhile for the purpose of dealing with remote time depths. For instance, where there is only 5 per cent retention, it is distinctly more satisfactory to have fifteen rather than ten actual instances.

## DETERMINING TIME INTERVAL

In calculating rate of retention in historic cases, it is important to have correctly dated samples and to be sure that both samples are on the same line of language tradition. In one of our instances

Middle Egyptian and Coptic are compared. The time of Middle Egyptian is given as 2100 to 1700 B.C., Coptic as A.D. 300 to 500. This makes the time interval between the two samples somewhat ambiguous, ranging anywhere from 20 to 26 centuries, and the rate of retention would accordingly vary from 73 to 78 per cent per 1,000 years. The difference is not more marked than this because we are dealing with a long time span. If the problem were one involving 400–500 years, the difference of a single century in the assumed time would make 4 per cent difference in the rate per 1,000 years. We thus see that some of the variation in the index of retention may be due not to differences in the process of linguistic change but to errors in measuring the time span between the compared samples.

To overcome this difficulty, Griffin's approach for French is excellent, since for both his early and late samples he takes the language of single authors, making it possible to date the vocabularies within a couple of generations. In using this device one must take the precaution, as Griffin does, of choosing authors who definitely use the contemporary language of their time. If the authors should be following some archaic literary tradition which prefers words of some centuries before, this would skew the results. Similarly with reference to contemporary speech forms, one must take the language of current popular usage and not a formal or literary style which imitates the usage of earlier times.

Another requirement for measuring rate of change in these cases is that the two samples be in the same line of linguistic development. If the earlier of the two is not the actual forerunner of the second but merely a close relative to it, the divergence already present in the older period will add to that which is due to the passage of the given amount of time. The cases we have used probably involve a minimum of deviation from this cause.

As already suggested, the influence of an error in calculating the time period is most noticeable for a short total period. It is therefore wise to use longer periods as much as possible. However, this would eliminate the use of data from certain areas where ancient records do not exist, for example, the New World. We have so far included one example in our material, that of Dominica Carib for a 300-year period. Other cases can and should be taken but the short-time results should be considered as less accurate, other things being equal, than those covering long periods.

So far our longest historic periods are in the neighborhood of 2,000 years. To test the method in every possible way, it would be desirable to find instances covering much longer periods. They are of course rare, but Babylonian-Assyrian offers at least one case. It would also be good to follow a single language through a series of short periods, comparing these finally with the total change for the full time span, in order to see how the rate of retention varies within a single line of development.[15]

## VARIATION

It is to be expected that a certain amount of fluctuation in the calculated rate of vocabulary retention will remain, even after the obvious specific sources of error are eliminated. At least in part this variation is the usual "variance" found in all statistical phenomena. It cannot be eliminated but can be calculated. The present paper does not attempt to set forth this phase of the problem, but instead cites the work of R. D. Lees, who gives the "mean rate constant" on the basis of the present evidence as approximately 81 per cent $\pm$ 2 per cent per 1,000 years "where the limit of error is the 9/10's error calculated by a small-sample method.[16] Lees is continuing his work, and will eventually produce a full analysis of the mathematical aspect of lexicostatistics.

In addition to statistical variance, it is quite possible that the constant may be affected within limits by culture historical factors. Of course, every culture change affects the full vocabulary of a language, giving it new terms and modifying the meanings of old ones. Contact between peoples often leads to the acquisition of new concepts and of new words. One of the best illustrations of this is English, which has taken over so many words (especially from Latin and French) in the last 2,000 years that about half of the total vocabulary is identifiable as loanwords. However, within the fundamental vocabulary the borrowings are much less, there being only 6 per cent in the test list used in our studies. However, not only is the percentage small but borrowing shows no effect on the English retention rate. The 6 per cent of borrowed elements, accumulated over 2,000 years under cultural circumstances which greatly favored borrowing, exceeds the percentage in any of the

[15] Prof. I. J. Gelb of the University of Chicago has projected such a study covering different periods of Assyrian.

[16] *Op. cit.* in footnote 10.

other languages studied, but the retention rate is not correspondingly lower. Thus, a language which borrows some basic words from foreign languages does not necessarily change the total fundamental vocabulary faster than another language whose only changes are the substitution of one native form for another.

Are there other special factors? What we have just observed as to loanwards in English demonstrates that we cannot merely take it for granted that any given cultural influence must skew the rate of change in fundamental vocabulary. Instead, it is necessary to test carefully every hypothesis that may be suggested. For example, Elmendorf suggests that word tabus connected with mourning may have substantially changed the rate of retention of certain Salish Languages.[17] This can be checked by comparing the divergence of Twana, which is known to have had tabus, and that of a language which evidently did not have them, say Columbia, with reference to a distant relative of both of them, Bella Coola. Now, Twana has 15 per cent agreement with Bella Coola; Columbia has only 12 per cent. Quinault, which is a neighbor of Twana and which probably also had the tabuing customs, has 12 per cent agreement with Bella Coola, exactly the same as Columbia. These figures show that language with tabus have not changed any faster than those which lack them.

Until some research has been undertaken to determine causes of variation in the retention index, one tries to discover some pattern in the series of scores reported so far. But no such pattern has yet come to view. For example, what fact of history explains why Spanish should have a higher index than French and Romanian? If the explanation were that French and Romanian are on the margins of the Romance territory, then why should English have a higher retention rate than German in the West Germanic group? The search for such explanations is at present complicated by some uncertainties in the matter of dating the samples and as to the appropriateness of the test list itself. When these uncertainties have been cleared away, it will be possible to return to the problem with a real prospect of proving or disproving the presence of special factors affecting the rate of retention.

[17] William W. Elmendorf, Word taboo and lexical change in Coast Salish, *Internatl. Jour. Amer. Ling.* **17**: 205–208, 1951.

## CAUSE OF THE CONSTANT

Why does the fundamental vocabulary change at a constant rate? Not only curiosity but also scientific thoroughness impels us to seek an explanation. For, if we have some notion of why a given phenomenon occurs in nature, we are in a better position to direct future researches aimed at extending our knowledge still further. In the present case, we can use the constant for dating prehistory even if we do not know what produces the constant, but we shall be better guided in making our work more accurate and fruitful if we understand its mechanism. The answer is to be found in the nature of language itself.

A language is a highly complex system of symbols serving a vital communicative function in society. The symbols are subject to change by the influence of many circumstances, yet they cannot change too fast without destroying the intelligibility of language. If the factors leading to change are great enough, they will keep the rate of change up to the maximum permitted by the communicative function of language. We have, as it were, a powerful motor kept in check by a speed regulating mechanism.

The specific causes of change in language are of course various. Word tabus, existing in a variety of local customs, lead to the avoidance of words or to limitations on their use. On the other hand, the creation and use of figures of speech are widely encouraged among all human groups. Very important is the influence of new models in the form of neighboring languages and dialects, especially in view of the fact that at least some of the border population is almost certain to be bilingual. Intermarriage, trade, and warfare are some of the specific forms of contact. The influence on language is direct and indirect, since neighboring peoples not only borrow sounds, structural patterns, and words from each other, but adopt, even more readily, concepts, institutions, inventions. In other words, culture change takes place and this in turn calls for the development of new communicative symbols. Even isolated societies, in so far as such exist, experience culture change on the basis of their own reactions to their experiences, leading to the development of new vocabulary.

While it is subject to manifold impulses toward change, language still must maintain a considerable amount of uniformity. If it is to be mutually intelligible among the members of the community, there must be a large element of agreement in its details among the individuals who make

up the community. As between the oldest and the youngest generations, there are often differences of vocabulary and usage but these are never so great as to make it impossible for the two groups to understand each other. This is the circumstance which sets a maximum limit on the speed of change in language.

Acquisition of additional vocabulary may proceed at a faster rate than the replacement of old words. Replacement in culture vocabulary usually goes with the introduction of new cultural traits replacing the old ones, a process which at times may be completed in a few generations. Replacement of fundamental vocabulary must be slower because the concepts (e.g., body parts) do not change fundamentally. Change can come about by the introduction of partial synonyms which only rarely, and even then for the most part gradually, expand their area and frequency of usage to the point of replacing the earlier word.

There is one apparent exception to the slow changing norm, namely, the complete displacement of one language by another. In the special case of individuals or single families transplanted into another speech community, the offspring may grow up speaking only the new language. When a small speech community is surrounded by a larger one, under certain circumstances the smaller community becomes bilingual and eventually may drop its original language. The process of switching to a new language, of course, is not the same as that of replacing vocabulary elements, and does not constitute a real exception to the principle of a maximum rate of vocabulary change. In the past some linguists have operated with a notion of language mixture, where a new language is supposedly formed by the simple fusion of two original languages. Studies of lexical statistics, as well as other evidence, show that this phenomenon does not occur. A language may be modified under the influence of a second language, or it may be replaced by it, with the new language sometimes modified by the old one before the latter disappears, but there is never a mechanical blend of equal and equivalent parts of two tongues.

Although the evidence for the constant comes from a variety of historic and reconstructed prehistoric cases, all of it falls within the recent millennia of human history and has to do with people having a certain minimum of societal development. We must therefore be cautious in drawing inferences as to the rate of vocabulary change long ago, say 100,000 or 500,000 years back, when human society may have been substantially less complex than the most primitive historically known groups. However, this is largely a theoretical point, since linguistic reconstruction does not reach back anywhere near those remote times.

## DIVERGENCE

The dating of prehistoric events by vocabulary statistics is possible because of linguistic divergence. The simplest case is that in which a migration or an invasion, taking place fairly suddenly, breaks the community into two parts and where conditions prevent them from maintaining any effective contact with each other after the separation. The vocabulary changes that take place in the two groups will then be independent of each other, the words of fundamental vocabulary which are displaced in one community may or may not be lost in the other. After say 1,000 years, there will be two distinct languages, each of which will have retained a certain portion of the fundamental vocabulary of the earlier common form. This percentage, measured by means of our test list, would be approximately 81 per cent. Since the changes in the two languages are independent of each other, by the law of chance, they may be expected to coincide with each other in 81 per cent of 81 per cent of the cases, in short 66 per cent. In 2,000 years, when each language has only 66 per cent of the earlier common vocabulary, the two will agree in only 43 per cent. The relationship of time to percentage of correspondence of contemporary languages has to be figured as twice the time since their common earlier state, because divergence is going on simultaneously in both lines. The mathematical formula for time depth of divergent development is therefore:

$$d = \log c \div 2 \log r.$$

That is, time of divergence is equal to the logarithm of common percentage of vocabulary divided by twice the logarithm of the retention rate. To save the effort of consulting the logarithm table and carrying out the division, one may use a prepared chart, like the following based on $r = 81$ per cent ($r^2 = 66$ per cent) and divergence time given in centuries to the nearest half century.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 95 | 1 | 70 | 8 | 45 | 19 | 20 | 38 | 10 | 54 |
| 90 | 2.5 | 65 | 10 | 40 | 21.5 | 18 | 40 | 9 | 57 |
| 85 | 4 | 60 | 12 | 35 | 25 | 16 | 43 | 8 | 59.5 |
| 80 | 5 | 55 | 14.5 | 30 | 28.5 | 14 | 46.5 | 7 | 63 |
| 75 | 6.5 | 50 | 17 | 25 | 33.5 | 12 | 50 | 6 | 66.5 |
| | | | | | | | | 5 | 70.5 |

The first column is percentage of cognate vocabulary and the second column divergence time in centuries.

Dates calculated by the author in various earlier studies have been on the basis of $r = 85$ per cent, which gives slightly longer time spans. The comparison is shown here for intervals of tens of centuries to show the difference in the calculations:

| Centuries: | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |
|---|---|---|---|---|---|---|---|---|---|
| $r$ (%) = 81 | 66 | 43 | 29 | 18 | 12 | 8 | 5 | 3 | 2 |
| $r$ (%) = 85 | 72 | 52 | 37 | 27 | 19 | 14 | 10 | 7 | 5 |

Sometimes the two languages compared belong to different epochs. Say, language $A$ is of the present while language $B$ is of 2,000 years ago. The calculation is not difficult. One adds half of the time depth of $B$ to the divergence time indicated by the common percentage of $A$ and $B$. The formula, with $dB$ representing the time depth of $B$, is

$$d = (\log c \div 2 \log r) + (dB \div 2).$$

## SLOW DIVERGENCE

Often the divergence of one language into two takes place not from a clean separation of the old community into two parts but as a result of incomplete contact over a long period of time. Say, a language is spoken over a fairly large area, perhaps with four villages $A$, $B$, $C$, $D$. Say that there is still a fair amount of social intercourse between each pair of neighboring villages. After a lapse of time in this situation, one may find that villages $A$ and $B$ understand each other readily, and the same holds for $B$-$C$ and $C$-$D$; but $A$ understands $C$ and $B$ understands $D$ with difficulty, and $A$ and $D$ perhaps cannot understand each other at all. Such a condition, described as a dialect chain (or net, if it is bi-dimentional), would be reflected in the lexical statistics of the dialects. In such a situation, the time depth calculated as between $A$ and $D$ presumably corresponds to the actual time from the first settling of the area or from the time when an earlier close social relationship among the villages broke down.

The type situation could be illustrated by many actual cases. The circumstance giving rise to the situation is that of incomplete inner cohesion of extended speech communities. If this relationship continues long enough, the divergence between even the close dialects may some day reach the point of difficult intelligibility and eventually of mutual non-intelligibility. But the earlier relationship will be reflected in the vocabulary correspondences. Such language chains seem to be evidenced at various points in the Salish linguistic map, for example, in the following languages of the Interior Division, shown here with the percentages of common vocabulary:

| | Li | Sh | Ok | Cm |
|---|---|---|---|---|
| Lillooet | — | 48 | 33 | 25 |
| Shuswap | 48 | — | 50 | 34 |
| Okanagon | 33 | 50 | — | 54 |
| Columbia | 25 | 34 | 54 | — |

Any neighboring pair of languages in this sequence share about half of their vocabulary; $A$ with $C$ and $C$ with $D$ have a third of their vocabulary in common; $A$ and $D$ have only a fourth. We infer from these figures that this series of languages has developed out of a single undifferentiated language in about 34 centuries—the time indicated by the minimum agreement of 25 per cent. The dialects which gave rise to the present languages must have constituted a chain in essentially the same order of geographic location from the beginning.

Contrariwise, geographic neighbors which do not show such lexical relationships could not have been in close contact continuously. Let us take as a contrasting example percentages in the following four geographically consecutive Salish languages:

| | Sh | Li | Fr | Nt |
|---|---|---|---|---|
| Shuswap | — | 48 | 19 | 19 |
| Lillooet | 48 | — | 28 | 26 |
| Lower Fraser | 19 | 28 | — | 58 |
| Nootsack | 19 | 26 | 58 | — |

In this sequence, $A$ is rather closely related to $B$, and $C$ to $D$, but there is a distinct break between $B$ and $C$. Moreover, $B$ is not closer to $C$ than to $D$. This implies that the divergence of $C$ and $D$ must have taken place when the forerunner of this group was no longer in the relationship of a dialectal chain with $B$. The fact that $C$ and $D$ are closer to $B$ than to $A$ suggests that there was an old dialect chain long ago, while $C$ and $D$ were undifferentiated. In other words something like 39 centuries ago (based on 19 per cent minimum agreement in the chain) there was a dialect chain $ABX$. Not more than 32 centuries ago (based on 26–28 per cent agreement between $B$ and $C$ or $D$) the chain was broken into two parts, $A$, $B:X$ either through some sudden event, as migration or invasion, or because the slow linguistic change had passed the point of easy inter-dialectal influence. The unified language $X$ split up into a dialect chain $CD$ only after it ceased to be influenced by $B$. Further elucidation of prehistoric

relations among these languages can be obtained by considering them with reference to their neighbors in still other geographic directions.

The foregoing examples are illustrative of the kind of inference that can be drawn from lexical statistics about the prehistoric relationships among human communities. The amount of detailed prehistory that can be read in this way is of course limited, but it represents an important advance over what was previously possible.

## DIFFUSIONAL EVIDENCE

The evidence of vocabulary statistics can often be coordinated with other linguistic evidence, particularly that of diffusion. An interesting case in the Salish stock is the close agreement of a series of distantly related languages in certain points of phonetics. Tillamook, Cœur d'Alene, Comox, and the Puget Sound group of languages show evidence of having once made the sound shift of Salish *ẇ* to $g^w$; they also agree in the change of *k* to *ch* and partly also on the treatment of Salish *y*. The common features of this set of languages in part stand out against the typical traits that unite them with their closer linguistic relatives; thus Comox and Cœur d'Alene are more like each other in their treatment of original *y* and *ẇ*, even though they are a thousand miles apart, than like their immediate geographic neighbors and their immediate sister languages linguistically speaking. These facts could be easily reconciled if the languages mentioned were in geographic contact with each other, since it is known that phonologic changes can move by diffusion across language boundaries. Since they are not now in contact, the inference is that they once were and that they continued so long enough to admit the diffusional imitation of a series of sound changes. The best assumption geographically is that the area in which these groups lived as neighbors must have been somewhere in the area of Puget Sound or Vancouver Island. It follows then that Tillamook and Cœur d'Alene have migrated to their present areas in relatively recent times.

Is there any way of dating these events? Within limits, *yes*. The diffusional situation must have existed after the time when Comox branched off from its nearest linguistic relatives, Seshelt and Pentlatch, for neither of these languages shares special features with Tillamook and Cœur d'Alene. Comox-Seshelt-Pentlatch show evidence of having once been a dialect chain, with 45 per cent vocabulary agreement between the extremes, and this figure corresponds to 19 centuries of divergence. The contact of Comox with Puget, Tillamook, and Cœur d'Alene was therefore within the last 19 centuries, and the Tillamook and Cœur d'Alene migrations must have taken place since that time. For the present, we cannot be more exact than this, but it is probable that subsequent studies may narrow the period within which the events could have taken place.

Borrowed words as diffusional items are of particular interest because they give evidence not only of ancient contacts but also of some of the cultural items that passed from one group to the other. An illustration can be given here which fits in with the phonological diffusion already cited. In Quileute, a non-Salish language of the Olympic Peninsula, and in Nootka, an equally unrelated tongue of Vancouver Island, we find the word qaawats "potato." Related forms are found in Tillamook, qakts "potato," and in Cœur d'Alene, sqigwts "wild potato." Now, in Tillamook every present-day *k* represents an older labialized $k^w$ which in turn was the product either of original $k^w$ or of $g^w$ from *ẇ*. Thus Tillamook "potato" must have once had the form qawts, which corresponds exactly with Nootka and Quileute except for differences in the vowels reflecting nothing more than the diverse quantitative scheme of vowels in Salish as contrasted with Nootka and Quileute. A murmur vowel between *w* and *ts* and the long pronunciation of the first vowel make Salish qawts sound practically the same as Nootka qaawats. The Cœur d'Alene word has the noun-prefix *s-* and has a changed vowel in the first syllable of the word, but is otherwise derived from the same earlier form as the Tillamook; the vowel can be explained as a secondary change somehow related to Salish sound symbolism.[18] The Salish words thus match perfectly with the Quileute and Nootka, and borrowing must have taken place. There is at present little to indicate the direction of diffusion, whether from a Salish language to Nootka and Quileute, whether from one of these to Salish, or from some entirely different language to all of these. What is clear is that the word goes back to the same region where the *ẇ* to $g^w$ sound shift took place, and that it was in use about 2,000 years ago. It is also evident that it applied to some root native to that region and important in the diet of the local people.

[18] See Gladys A. Reichard, Sound symbolism in Cœur d'Alene, *Internatl. Jour. Amer. Ling.* **11**: 78–91, 1945.

## DATED LINGUISTIC PALEONTOLOGY

The example of prehistoric word borrowing just cited illustrates how reconstruction of ancient words and their meanings throws light on prehistoric culture even to small details. This method, known as linguistic paleontology, may be applied either with loanwords or with the native words of the linguistic group and constitutes an important means for penetrating prehistory.[19] Lexical statistics greatly improves the possibilities of linguistic paleontology by adding approximate dates to the detailed cultural information. A systematic exploitation of this advantage should bring valuable results, especially in correlating linguistic reconstructions with archeological evidence.

[19] A classical example of linguistic paleontology is O. Schrader and A. Nehring, Reallexikon der indogermanischen Altertumskunde, Berlin-Leipzig 1917–1928.

# A PALEO-INDIAN SITE IN EASTERN PENNSYLVANIA: AN EARLY HUNTING CULTURE

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In the years following the excavation of the Folsom, New Mexico "bison quarry," and the recognition of the significance of High Plains sites with delicate forms of fluted projectile points, the study of fluted point complexes took two directions. In the western United States, excavation and reconnaissance techniques were used to work out the artifact and faunal associations of fluted points within sites, and to provide geological context for Folsom occupation by study of the ancient river-level terraces on which sites were located. In the eastern area studies of this complex were entirely distributional and typological, and artifact and faunal associations remained unknown down to the present time.[1] No reports of cultural inventories for fluted point sites in the East existed in the literature or in the unpublished information of the archeologist. No information on the physiographic associations of sites or of series of stray points was available until recently.

Until very recently we had no reason to believe that fluted points were not merely a rare minority artifact type of one of our ordinary Archaic cultures. The excessive rarity of such projectile points in most eastern areas, as well as the select flints from which they were made and their resemblances in flint-knapping technique to later Archaic and earlier Woodland industries, suggested that the fluted point might even be an unimportant aberrant form in the East. As far as the record went, no sites which produced fluted points in any significant number had been found in the Eastern Woodlands. Recent recognition of several sites of this type now permits the identification of a new technological stage, Paleo-Indian, in the Northeast.[2]

[1] Major sources on fluted points from the Northeast, selected for typological information, include the following publications:

H. C. Shetrone, The Folsom phenomena as seen from Ohio, *Ohio State Arch. and Hist. Quart.* **45**: 240–256, 1936.

Edgar B. Howard, Grooved spearpoints, *Penna. Arch.* **3** (6): 11–15, 1934 (Howard's plate of eastern fluted points was reprinted in *Penna. Arch.* **5** (1): 40, 1935, with the erroneous caption, "Folsom points and Folsom-like points from Clovis, New Mexico").

Archibald Crozier, Delaware Folsom points, *Bull. Arch. Soc. Delaware* **3** (1): 8–10, 1939.

John Witthoft, Notes on Pennsylvania fluted points, *Penna. Arch.* **20**: 49–54, 1950.

B. C. McCary, A survey and study of Folsom-like points found in Virginia, *Quart. Jour. Arch. Soc. Va.* **2** (1).

Arthur George Smith, Fluted points from Milan, Ohio, reprint from *Southwestern Lore* **17** (1). Smith's specimens are Onondaga chert and seem to pertain to the Enterline Industry.

William Smail, Some early projectile points from the St. Louis area, *Jour. Illinois State Arch. Soc.* **2**: 11–16, 1951.

William A. Ritchie, *The Pre-Iroquoian occupations of New York*, Rochester Museum, *Memoir* **1**: 311–12, 1944.

[2] The term Paleo-Indian was originally used by Roberts for American cultural assemblages which appeared to be chronologically early, on the basis of geologic, faunal, or typological evidence, and I believe he used the term in a cautious non-classificatory sense, since he was obliged to handle many complexes of controversial status under this term (Frank H. H. Roberts, Development in the problem of the North American Paleo-Indian, *Smith. Misc. Coll.* **100**: 51–116, 1940). Griffin used the term in contrast to Neo-Indian, and extended Roberts' usage to include typical complexes of what I call the Early and Late Archaic Periods, as well as various Basketmaker complexes. In Griffin's usage, the term is a convenient label for complexes which are formally not Neolithic, particularly in economic pattern, and is offered in objection to widespread use of the term Archaic Pattern (James B. Griffin, Cultural change and continuity in Eastern United States archaeology, *Man in Northeastern North America, Papers Robert S. Peabody Foundation for Arch.* **3**: 37–95, 1946, pp. 40–43). I have used the term for a technological stage, presumed to equate with a time horizon, with the absence of pecking and grinding as a tool-shaping method as the major criteria; this usage is a refinement of Robert's usage, probably of limited value, but permitting precise and convenient classification of industries (John Witthoft, an outline of Pennsylvania Indian history, *Penna. History* **16** (3): 3–15, 1949, p. 13). The term is probably a barbarism to the classicist, but, in its several usages, fills important needs in American archeology. I also propose the name, Enterline Chert Industry, for the chipped stone assemblage at the Shoop Site described here, and use the name as a more formal equiva-

Several sites of a fluted point complex were apparently known in our area at least ten years ago, and we have good reason to believe that others exist. At least five years ago I had heard rumors of a site of this type on an eastern terrace of Lake Champlain, and this site was carefully protected by a collector, William Ross, from 1922 until 1950, when William A. Ritchie of the New York State Museum and Donald Lenig of the Van Epps-Hartley Chapter of the New York State Archeological Association visited the Mark Reagen Site and examined the collection from there. According to the account they gave me, the Reagen Site was in a sand blow-out on one of the old beaches high above the Lamoille River near St. Albans, Vermont, and seemed to be now non-productive. The collection from it included a few finely-made fluted points and fragments, along with scrapers and other tools, some of them very unlike types described later in this article.[3]

The Parrish Site, in Hopkins County, Kentucky, is the only eastern site with a fluted point component reported in the literature which has been excavated.[4] This early occupation was not stratigraphically separable from a much more dense Late Archaic component, and still other

lent of Shoop Site assemblage at various places in the report. Distinct fluted point industries apparently occur in this and other parts of the Northeast, although they are not as well known in detail; the Parrish Industry is one of these.

I am deliberately avoiding use of terms of the Midwestern Taxonomic System, since I am not impressed by the possibilities of this mechanism for ordering archeological data, and do not believe there is any need for such a system of classification in the Eastern Woodlands today. This system is allegedly a statistical method for comparing sites and components, with a special set of terms for cultural relationships of different statistical orders. I find myself using terms from this set, such as component and focus, but merely as rough labels apart from their strict classificatory sense. In the East, with only a very few exceptions, cultural classifications following the Midwestern Taxonomic System are not the results of application of a special technique but are the usual archeologist's impressionistic orderings done up in a scholastic form; the soundness of such orderings is a factor of the common sense of the archeologist, and would never result from the blind application of statistical methods to trait lists which we so often identify with this routine of analysis. Since I am here dealing with only a few scraps out of the whole culture of a long-extinct community, I use other terms which may need clarification even though they have been in general use for some time. Alex Krieger, in correspondence, has emphasized need of this, since my use of fairly ordinary words as technical terms may be ambiguous and is certainly not consistent with everyone else's use of them.

I prefer to use the term "culture" in the archeology for the total recoverable remains and traces of a set of nearly identical communities; this is a "Focus" in the Midwestern System. An Industry is a series of objects which seem to be the result of one consistent manufacturing pattern. Most cultures include a variety of industries, as a bone-tool industry, a pecked-stone industry, a pottery industry, and perhaps several chipped stone industries. A site may have been occupied by a number of different communities at different times, and so may include several components, each of which is thought of as a unit in the archeological history. A component is the local, precisely definable unit of a culture. An assemblage is the total of objects found at a single site, and the term carries some implication of unity, although it does not necessarily mean they are to be considered as of one component. The Denbigh Flint Complex is here considered as an assemblage, even though it includes two industries. The term does not imply that I do or don't consider these two industries to have been contemporary. The Shoop Site is apparently a site with but a single component, including only one industry. Many other cultures include more than one flint industry, but this one did not. I have not used the term culture or focus for the Enterline Industry because we lack information about every other activity of these people besides their flint industry. In this article I am actually dealing with nothing more than this one phase of life of these early people.

The term Archaic may lead to some confusion because this word has been used to include what I call Paleo-Indian, even as Paleo-Indian has been used to include what I call Archaic. I think of the local archeology as classified first in a chronological framework and only after that in terms of intra-areal relationship. Such an outline includes three major technological stages, which equate, to the best of our knowledge, with major time divisions. The Paleo-Indian Epoch, so far not divisible into periods, lacked stone pecking and grinding techniques. The Archaic Epoch, provisionally divided into two periods, has as its "index fossils" ground stone tools but lacks pottery. The Woodland Epoch, now seen as four or five periods, was characterized by pottery-making. This triple division seems to be valid almost throughout the continent; it is not to be considered as a major tenet of American archeology, but rather as a tool for segregating cultures into natural classes for further study. Comparative parts of this paper are restricted to complexes which lie certainly within the Paleo-Indian Epoch and technological stage. The term "Early Hunter" has been used by Alex Krieger (Certain projectile points of the early American hunters, *Bulletin*, Texas Arch. and Paleon. Soc., 1947) as an alternative term for Paleo-Indian, to avoid confusions raised by various usage of that term.

[3] My impressions of this site are based on conversations with Ritchie and Lenig, and on a manuscript, A Probable Paleo-Indian Site in Vermont, by Ritchie. I have not recently examined the specimens found here. See Ritchie, *Pre-Iroquoian occupations*, 312, for earlier note and location of site.

[4] Wm. S. Webb, The Parrish Village Site, *Reports in Anthropology*, University of Kentucky, Lexington, 7 (6): 403–451, 1951.

complexes may have been present on the site. Since much of the material from this site differs so strongly from the complex with which I am here concerned, and since some of these important distinctions may be of chronological import, I will attempt some comparison of this site with ours in the concluding portions of this paper. I believe the Reagen Site and the Parrish Site, along with the Wilhelm Site discussed briefly in this report, contrast with the Shoop Site (the subject of this report) and represent later fluted point industries.

Since I began the study of the Shoop Site, my attention has been called to the existence of two other sites, the Williamson Site in Virginia and site St 4 in North Carolina, which represent the same industry as the Shoop Site but which are not the same complex as is represented by the Parrish Site. These various sites, representing six different parts of the Eastern Woodlands, are discussed at greater length in a later portion of this paper; I believe they represent two somewhat distinct industries, and I am attempting comparison of them with one another and with Fluted Point industries of the High Plains.

An important site in eastern Pennsylvania has been known for at least fifteen years, however, although specific data from it have not been available until this year. The site was discovered by accident by George Gordon, of Palmyra, Pennsylvania, on the farm of his father-in-law, Morris Akens, near Enterline, Pennsylvania. Gordon, a collector of Indian relics and a competent surface-hunter, had done little collecting in the area around Enterline because sites were few and not productive. In taking a shortcut through a plowed field on the farm, which is a most unlikely looking place for an Indian site, he noticed chips and found a few artifacts. Despite the extreme thinness of the site, he continued to hunt this farm very carefully, because of the peculiar form of the projectile points which he found. About 1936 he showed his collection from this site to Sam Farver of Palmyra, and at this time he had eighteen fluted projectile points and fragments, and a larger number of scrapers. Farver borrowed some of the projectile points from him and showed them to the professional archeologists of his acquaintance but was unable to arouse any interest in them. At this time Gordon refused to divulge the location of the site, and, in fact, conscientiously protected the site until 1942. Farver, however, with some knowledge of Gordon's friends and relatives, was able to follow his trail to the site. Here, because of the very thin and spotty distribution of the industrial material, he was unable to find any indication of an Indian site; the fields in which Gordon had collected material were not then under cultivation, and adjacent fields were totally barren, as I also found them this year. Farver's failure to check the site was one reason for my later skepticism about Gordon's collection.

In 1941 Gerald B. Fenstermaker, of Lancaster, Pennsylvania, heard of Gordon's material. He examined the collection, and made sketches of most of the specimens, but was unable to learn the location of the site. Fenstermaker distributed blueprints of his sketches,[5] and one of these came to the attention of Edgar B. Howard, of the University Museum, Philadelphia. Howard visited the site at least four times, three of them with Gordon. He apparently did little surface hunting on the site, but dug a number of unproductive test pits, apparently all in a field which I have not seen plowed. Howard was the first person who learned the location of the site from Gordon. In 1941 Gordon exhibited part of his series at a meeting of the Eastern States Archeological Federation at the University Museum, Philadelphia,[6] and Howard later published a brief notice of the site.[7] In this article, which contains no data on the lithic industry, Howard published one specific bit of information—the precise location of the site. At the same time, Gordon showed the site to Frank J. Soday, now of Philadelphia, who collected on it in recent years and who has very kindly made his collections and notes available to me. Howard had been unable to find sufficient evidence on the site, had been unable to identify the flint of which Gordon's points were made,[8] and left no work in process on the site at the time of his death. He had abandoned the site by publishing a location and an altitude figure taken from a Topographic Survey sheet. Since Farver and Fenstermaker had been unable to get more definite information, and especially since no one of my acquaintance who had access to Gordon's material had followed up on the problem, Farver and I were extremely

[5] Blueprint, 10 × 17 inches, captioned "'Folsom' type artifacts found on/a site located in Pennsylvania/ Sketched for research/ July 15, 1941/ by Gerald B. Fenstermaker."

[6] Dorothy Cross, Minutes of the Eastern States Archeological Federation Annual Meeting, Philadelphia, Pennsylvania, *Penna. Arch.* **12**: 7–14, 1942, p. 9.

[7] Edgar B. Howard, A "fluted point" site in Pennsylvania, *Penna. Arch.* **12**: 4–6, 1942.

[8] *Ibid.*, 5.

suspicious of a fraud. Therefore, our first problem seemed to be to locate Gordon and get to know him and his collection. I had decided that the story would stand or fall on the basis of the flints from which his artifacts were made; if they were of the stones ordinarily used for fluted points in Pennsylvania, his account was probably correct. As a further check, it must be possible still to find chips of the same flints at the same weathering stage in the fields from which his specimens were alleged to come. The rest of my account is largely a substantiation of Gordon's statements about this site.

We were not able to locate Gordon until October, 1950, but I found him extremely cooperative; according to what I saw of Gordon's personality and character, his account should prove to be entirely reliable. Previous accounts of the material had not prepared me for the two cigar boxes of material which he produced, which included forty-one fluted points and characteristic fragments, one hundred and thirty-nine end scrapers, forty-nine pointed side scrapers, eight unfinished fluted points, and several hundred chips. One spall and two fluted points were of deeply weathered jasper, one point fragment was of black flint, weathered to a grey spongy surface, and every other bit of stone was Onondaga Chert, all very deeply weathered. I know of no other source from which Gordon could have obtained such a collection except from a local fluted point site, and that was something still unknown. A few days later we visited the site with Gordon, and later again without him. Farver and I found two fluted points, ten end scrapers, fourteen side scrapers and fragments, and two rejects on the site during these two visits, as well as a small quantity of chips. Later visits were less productive but continued to add to our picture of the site. Our sample matches Gordon's exactly in typology, lithic material, weathering, and (roughly) in artifact proportions; there is no longer any question of the source of Gordon's material or of the status of his site.

In 1942 Gordon showed his collection and the site to Dr. Frank J. Soday, who has since hunted the site at every opportunity. Soday has loaned his specimens to me and sent voluminous notes. His series includes 120 distinctive tools, as well as a large series of chips, and gives further weight to our sample, both by enlarging it and by adding another trained observer to the number of independent investigators. The proportion of different tool types in Soday's series is roughly like Gordon's, with end scrapers more numerous, but side scrapers show a high incidence in his series because he saved all fragments, whereas Gordon's collecting was selective.

## THE LOCATION

The site itself is located on the present H. Dean Shoop Farm, formerly the R. H. Mohr Farm, and is scattered over more than twenty acres of a flat but irregular plateau, bounded on one side by an upper branch of Armstrong's Creek and on two other sides by tributaries of that branch.[9] There are at present four springs at the base of this hill, and an even grade from all sides gives easy access to the hilltop, which is high above the streams. The hill itself commands a large area of Armstrong's Valley north of Dividing Ridge, but is much too elevated and in too isolated a location for one to expect an archeological site. The valley in which it is located is one of the broader, rough valleys within the anticlinal ridges north of the Lebanon synclinal valley, and is bounded by steep mountain ridges on the north and south, and rises to rough mountain country on the east, so that it is only easily accessible from the Susquehanna Valley to the west, and is in effect a cul-de-sac. The valley floor is rough and unplaned, made up of hillocks and steep-sided valleys, with twisting rapid streams cutting against steep banks at every turn. The whole area, both in the lie of the land and in the sparsity of Indian material throughout the valley, does not seem to have been a good place for human occupation in recent times, and the topography resembles such valleys as that of the Chickiesalunga in Lancaster County, where sites are almost non-existent. (See fig. 1 for general location.)

If the site itself were any thinner it would not be a site. Eleven very slightly elevated areas on the flat hilltop, often more than a hundred yards apart, and generally less than thirty feet in diameter, usually yield about a half-dozen chips of all sorts and one or two artifacts after each cultivation. Areas between these productive spots are probably not barren because of erosion, else we would find industrial material on the slopes below. This spotty distribution of material seems to rep-

[9] The Shoop Site is located within the area covered by the Harrisburg, Pennsylvania, Topographic Sheet (15 minute map) and is located, on the printed map, 9 13/16 inches east of the west printed edge of the map, and 16 1 1/16 inches north of the south edge. Fig. 1 shows approximate location.

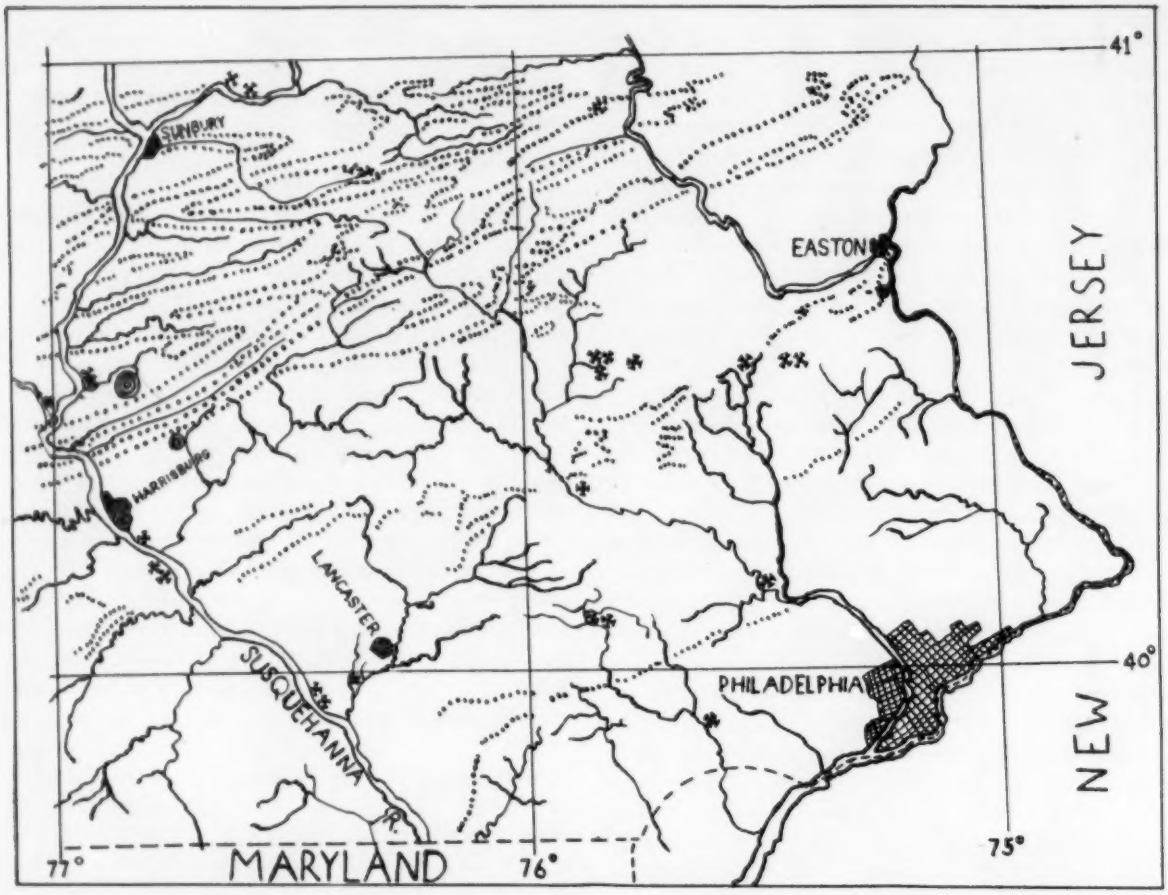


FIG. 1. Map of southeastern Pennsylvania. The Shoop Site is located within the triple concentric circles near the left center of the map, and the Wilhelm Site within the double concentric circles. Small crosses mark the approximate locations where isolated fluted points have been found in this portion of the state. Stream courses are marked by solid lines and only streams which were major Indian communication routes are drawn. Dotted lines represent the ridge-crests of mountains more than a thousand feet above sea-level. The stream courses and ridges developed on the local Appalachian series of folds are the major geographic features of the area.

resent the original nature of the site, and probably each spot represents a different camp or a separate hearth within a camp. Lower spots between elevations may have industrial material buried beneath slopewash, but we have found no evidence of this. Occasional chips and artifacts found outside of these productive spots have probably been transported by farm machinery, since they are so infrequent. Recent breakage of artifacts and chips by farm implements is very frequent.

The soil itself is a very thin sandy soil formed from underlying shale, and is filled with shale fragments. Disintegrated bedrock in place generally comes to within a foot of the present ground surface. This is a sandy red shale of the Catskill series, without softer zones or harder flag-like layers. Tractor-plowing was begun here only a couple of years ago, and in many places the plow is bringing up disintegrated bedrock from below the soil limits. Sandy shale blocks and a few quartz crystals are apparently derived from the bedrock. It is my impression that this land surface has changed little in recent times, except for sheet-wash erosion of humus and tiny soil particles, accelerated by plowing in the past century.

The typology, technique, and lithic material led me to consider the material from this site to be a single industry. The few exceptions are discussed separately below. The material from the Shoop Site is startling mainly because it is such a clean and clear-cut picture, with an exceedingly restricted artifact inventory. Because of restrictions

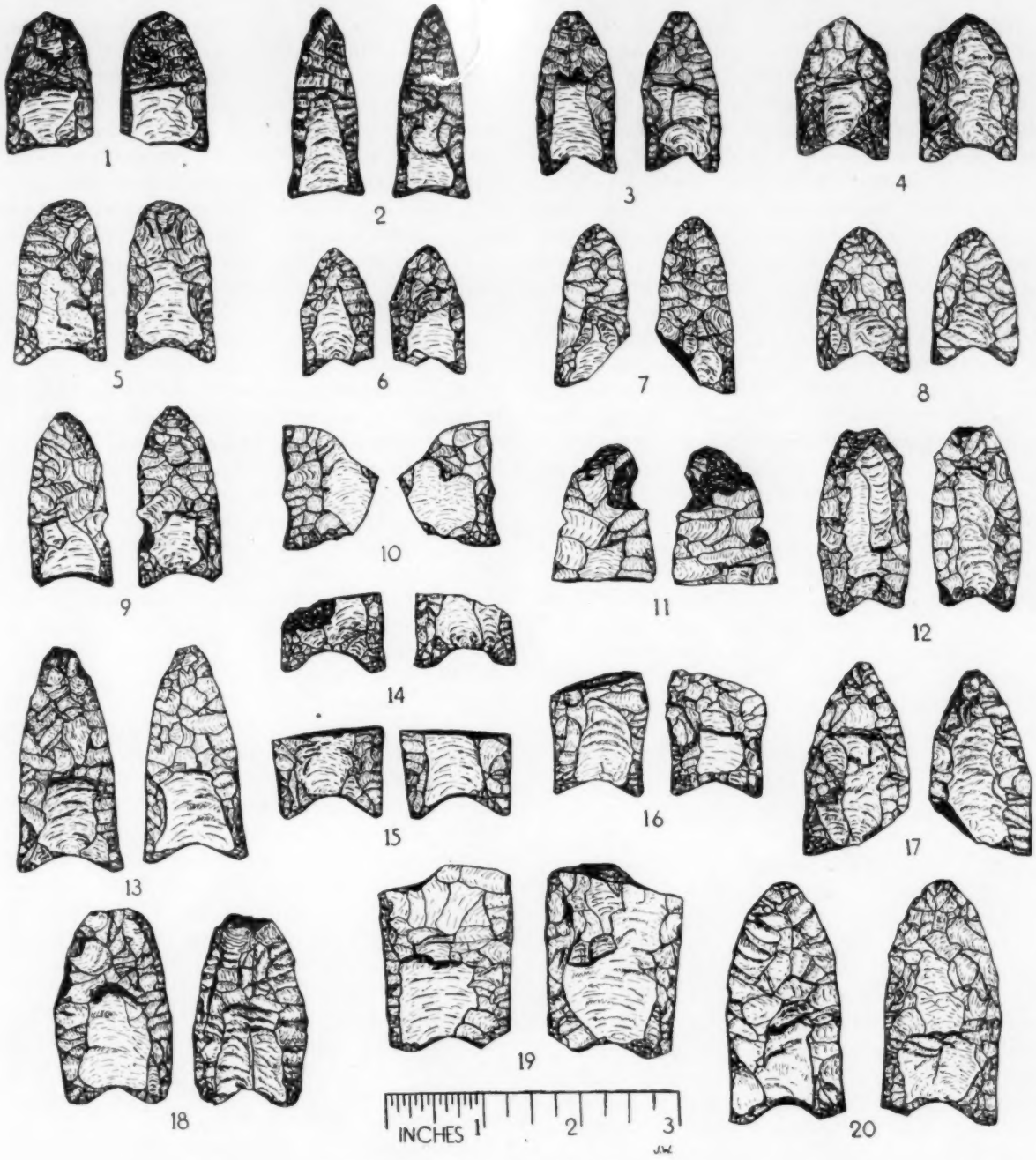


PLATE 1. Fluted points from the Shoop Site.

3, 15. Pennsylvania State Museum Collection, D[a] 20/1, others George Gordon collection.
19, 20. Pennsylvania jasper, rest are Onondaga chert.
4. Tip fire damaged.
9. One side recently damaged (chipped) by farming implement.
11. Tip area fire damaged.
14. One upper corner fire damaged subsequent to breakage. Edges not ground.

I now believe I have overlooked multiple channel flaking in drawings nos. 8, 10, 14, 15, 18, 19, and 20. These show evidence of smaller lateral fluting beyond that shown.

in lithic material, flint chipping technology, and artifact form, there can be no question that we are dealing with a nearly closed site, and that our particular scraper forms must have been made by the same people who made the fluted points. An assemblage of six tool types with utilized spalls makes up the Enterline Chert Industry.

Several artifacts have been found which are exceptions to this statement, and they apparently represent stray objects lost by later people hunting in this area but not living here. One is a musket ball, of slightly under sixty-five caliber, most likely of the late eighteenth century, found by Witthoft, who also found the hair-trigger of a Kentucky rifle on the site. Two stemmed spear points of grey-black cherty shale and a rhyolite spear tip were found by Witthoft, and two fragments of stemmed spears of black flint were found by Gordon. A corner-notched point, five stemmed examples, and three triangular points have also been found here by Soday. The corner-notched point is made of chert, but the rest are of stones not otherwise represented on the site and are probably stray points lost in hunting by later peoples. These points are not deeply weathered, and in technique and lithic material differ from everything else on the site; they are therefore ignored in later discussion.

## FLINT VARIETIES

The lithic material of the Enterline Industry is one of the most startling features of the site. In eastern Pennsylvania, the vast majority of fluted points in collections are made of Pennsylvania jasper. A fine grained black flint was the next most popular material, and Onondaga chert the third, with almost no specimens known of other materials. Many New York points are of jasper carried north from Pennsylvania. The total series from the Shoop Site, however, includes only two fluted points of jasper (found by Gordon) (pl. 1, nos. 19, 20), two jasper flake scrapers (found by Witthoft) (pl. 4, no. 12), one large jasper spall (Gordon), one side scraper (Soday), one end scraper, three tiny retouch flakes, and two spalls of jasper (Witthoft). The very fine quality black flint is about half as abundant as jasper in the collections seen from the state. The only artifact made of it from the Shoop Site is a fragment of a fluted point found by Gordon, while Witthoft found two tiny retouch flakes of this stone on the site. The source of this flint is not known with certainty, but I believe it is identical with the black flint or "touchstone" found as a variant of the jasper at the few known jasper quarries in Bucks, Lehigh, and Berks Counties in eastern Pennsylvania, but found in abundance only at the quarry at Macungie, Lehigh County. The jasper certainly came from these sources, and so our site has minority materials derived from within a very limited area in eastern Pennsylvania.

A few other materials are represented in more recent collections from the site. Deepkill flint, from the Hudson Valley, very likely from the Coxsackie outcrop, is the material of a single tip of a blank or reject found by Soday. An unfinished point (pl. 2, no. 4), deeply weathered, is Normanskill chert from the Hudson. A single chip of local chalcedony, probably from the Ordovician shales of the Lebanon and Oley Valleys of Pennsylvania, may or may not have come from the fluted point occupation. A very few fluted points of this stone are known from eastern Pennsylvania. A single retouch flake of non-local chalcedony is Flint Ridge, Ohio, material. Six chips and an end scraper (pl. 4, no. 29) of a drab, slightly granular white chert, almost opaque and without a glassy surface, are from a stone which I have never seen before. A single spall is of the streaked gray chert of the Williamson Site in Virginia, discussed later. Two side scraper tips (pl. 2, no. 17) are of light brown chert with abundant white quartz spherical (oolitic?) inclusions and fossil casts; it is a stone of non-local origin which I had never seen before. Arthur George Smith, of Norwalk, Ohio, found this stone represented in his Ohio collection by two chips, and these are the only other specimens of this flint which I have ever seen.[10] A finely-made end scraper with one oblique edge (pl. 4, no. 18) was made of a very dark brown chert of fine texture which is entirely new to me, and which must have also originated at some distance. It is possible that a better knowledge of the minority flints of sites of this type may become an important tool in suggesting relationships and directions of movement of peoples in this early period.

The remainder of the material from this site, well over eight hundred fragments, is Onondaga

[10] Correspondence with Smith has been one pleasure incident to study of this complex, and he has supplied most of the comparative material which I have seen from northeastern Ohio. Samples which he sent included a fair number of tools of western New York Onondaga Chert of several periods, including fluted points, flake tools, and end and side scrapers apparently of the Enterline Chert Industry from the Huron Valley.

chert of the mottled bluish western New York phase, according to my own gross judgment and Charles Wray's mineralogical study of the material.[11] This very distinctive chert, extremely resistant to weather and ideally adapted to flint-knapping, is not unusual in Susquehanna Valley artifacts, but it is almost always a minority material. It occurs as nodules and lenses in the Onondaga limestone in western New York and the Ontario Peninsula, and extensive outcrops with vast evidence of Indian utilization are conspicuous in several places west of Batavia, New York. I have not seen this very mottled phase of the chert in Pennsylvania outcrops or in the New York Helderbergs, but it is most characteristic of western New York Onondaga. Especially in Middle Woodland times, blanks from western New York outcrops and finished tools of New York Point Peninsula types were carried into all parts of Pennsylvania. Pebbles of this chert are common in till in northern Pennsylvania, and are found in the river gravels of the Susquehanna all the way to the Chesapeake Bay. In Late Woodland times these pebbles were a favorite flint source, and broken Onondaga chert pebbles and small tools made from them are common in late sites. Fluted points of Onondaga chert are well known but are not common; I have seen ten of them in collections from this state.

The proportion of this easily identified chert at the Shoop Site is surprising, since it is very different from the chert preferences indicated by stray fluted points in collections. The source of supply of this chert is an important question, since it indicates the direction of relationship of this culture. Several important bits of evidence seem to answer this question. First, the proportion of chips to finished artifacts is abnormally low at the Shoop Site; less than three chips, including tiny retouch flakes, per finished artifact have been found! Many of these chips show evidence of use of cutting tools, and many of them are the result of resharpening scrapers. There are no flint blocks, nodules, or rough rejects on the site. Therefore few of the tools were made here, but most of them were finished at some other place while some of the fluted points were brought here as leaf-shaped blanks. There is no evidence of any working of blocks or spalls into blanks, and surprisingly little evidence of tool-elaboration from blanks. No channel flakes from fluted points have yet been found on this site (although four fragments have recently been found; one is illustrated in pl. 3, no. 1), nor have any unfinished scrapers turned up. Fragments of river pebbles of chert have not been found, and no artifact or chip from the site shows any trace of a pebble surface. This contrasts strongly with other Onondaga chert-producing sites in the Susquehanna Valley, where such pebble surfaces are abundant. At least twenty spalls and tools do show nodule surfaces, however, such as occur at the Onondaga chert outcrops but which are invariably obliterated on stream pebbles. I feel certain from this evidence that the Onondaga chert was carried here from western New York, predominantly as finished tools but partially as blank forms, rather than being derived from pebbles of the Susquehanna outwash.

Thus the relationship of the Shoop Site is overwhelmingly to western New York, and weakly to eastern Pennsylvania. This matter of the direction of derivation of the lithic materials is extremely important, and I will return to it in my conclusions. Several other details about the stone are very significant. The flints found at this site are the most weather-resistant of any used in the area; in fact, rock crystal and Hardiston quartzite (from the South Mountain in Berks and Lebanon Counties, Pennsylvania) are apparently the only stones used locally which are more weather-resistant. Nevertheless, all of the chips and tools from the site are very deeply weathered compared to any tools of the same stones known from other industries. The jasper has developed a porous, somewhat gritty surface, light in color, and the chert shows a light-colored less dense zone of extreme weathering more than a thirty-second of an inch deep on all old surfaces. The jasper is more deeply rotted than this, and is the most weathered Pennsylvania jasper I have ever seen. These stone specimens show a much more advanced weathering stage than the same stones do on any other sites of any other local industry. A thick surface zone has had a large part of its non-crystalline silica constituent dissolved, whereas Late Archaic specimens of the same stones show a little more than a film of such disintegration. This must be due to relative age rather than

[11] Wray has examined the bulk of Soday's and my sample from this site, and agrees that the material originates in the Onondaga of western New York or perhaps in the little-known Onondaga of the lower Ontario Peninsula. A published statement of the mineralogical characteristics of this chert is included in the following: Charles Wray, Varieties and sources of flint found in New York State, *Penna. Arch.* **18**: 25–45, 1948.

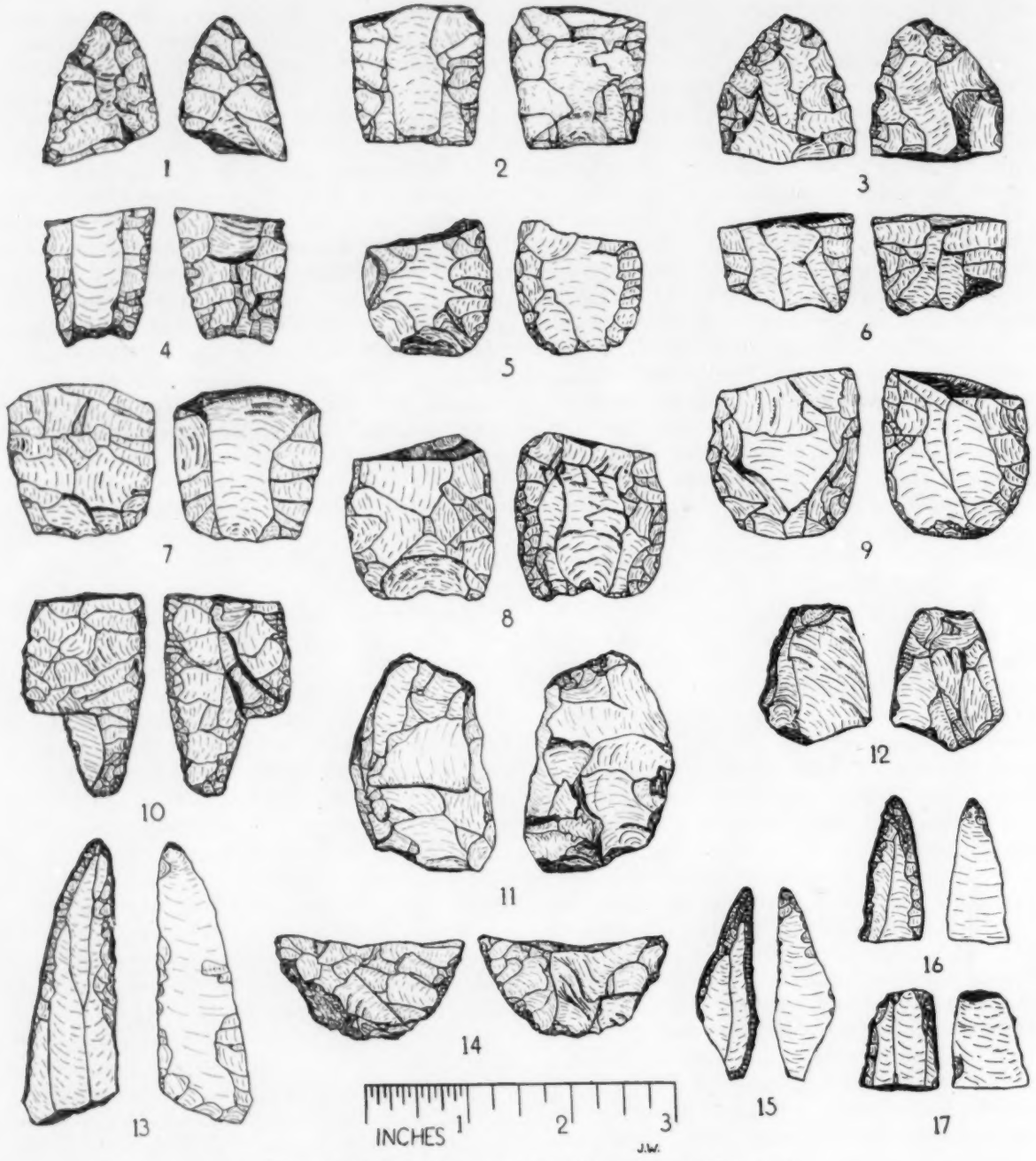


PLATE 2. Unfinished spearpoints, knives, and side scrapers.

1, 3, 11, 12, 14, 17. Pennsylvania State Museum Collection.
2, 4. Frank Soday Collection.
Rest. George Gordon Collection.
4. Normanskill chert (?), badly weathered.
17. Brown fossiliferous chert of unknown source, rest are Onondaga chert.
1. Intact tip of fluted point, apparently finished.
2, 4. Nearly completed fluted points.
3, 5–9. Blanks broken in process of elaboration into fluted points, not used as tools.
10. Blank broken along flaw (open vein), retouched as knife and scraper. The tip of this specimen has been found recently.
11. Blank, apparently rejected, used as a knife and scraper.
12. Spall from blank, apparently a channel flake failure, used as a knife.
14. Base of ovate knife, fire-damaged along lower edge.
13, 15–17. Side scrapers; 16 and 17 are incomplete, and 15 is the thinnest example from the site, and might be considered a highly retouched flake knife.

local soil characteristics, else such a strong and clear-cut contrast with specimens from many hundreds of other sites would not occur. This weathering is quite uniform on the whole Shoop Site series. None of the flints from the Shoop Site show any trace of wind-polish.

The flints of the Enterline Chert Industry are, by the criteria of the flint-knapper, the most tractable and best silicas available in the New York-Pennsylvania area. In Middle Woodland times, the apex in local flint working, they were the favored materials. The jasper, especially, comes from very local and inconspicuous sources and the chert has a quite restricted area of origin. I have often wondered whether a local fluted point industry might have emphasized more readily obtainable local stones such as rhyolite, argillite, cherty shale, and similar non-flints. Artifacts of some of these stones would be weathered beyond recognition by now if the fluted points were of any great antiquity. However, the Shoop Site has produced no chips, spalls, or blocks of any introduced lithic materials beside the flints described, and any others present in quantity would have been found, even if of completely weathered-out argillite. Thus it seems certain that our industry is restricted to these choicer materials. In terms of our presently-held ideas of culture sequence in the area, this presents a paradox. The earliest industry utilized only the very best flints which came from very restricted sources. The next succeeding industries of the Early Archaic Period used little if any flint or chert in southeastern Pennsylvania, but made all of their tools from argillite, rhyolite, and quartzite, which were much more readily available. These people did make a few ground and polished stone tools, but their projectile points do not show basal grinding. Next, the varied cultures of the Late Archaic Period continued to use the rough non-flinty stones but also used flints, cherts, and jasper. Not until the much later Middle Woodland Period do we have a return to almost exclusive use of good flints. Furthermore, there are tremendous differences in flint-knapping technique and typology between the fluted point industry and any of the Early Archaic industries, and there is evidence of a break in continuity in almost every detail of the surviving cultural inventories.

The flints from the Shoop Site bear abundant evidence that the site was an occupied area, regardless of how thinly the material may be distributed. About ten per cent of the chips and tools show evidence of fire. Four of the jasper artifacts are burned red, by the roasting of their coloring limonite. A higher proportion of chips than tools show fire spalling, but this distinctive type of non-conchoidal shattering out of surface is conspicuous on all types of tools. I cannot remember handling any series from any other site with so high a proportion of fire-spalled chips. On the other hand, distinctively fire-broken and burned stones of other materials have not been seen on the site.

One strange negative trait of the Shoop Site is the apparent total absence of carried-in stone other than flints. Most local Indian sites have an abundance of river stones and odd rocks, often fractured by percussion and fire and colored by heat, which have been transported to the site from other sources. The Shoop Site lacks these, and no possible hammerstones, grinding stones, or anvils of any sort have been found. They have been searched for most intently.

## CHIP FORMS AND FLAKE TOOLS

Several types of chips were found at the site. Blocky spalls of chert, triangular or prismatic in cross-section, tapered, and of no regular form, are not abundant. They are not chips removed from a core in tool-making, but are from hammer-broken blocks and are the result of gross breakage or coarse trimming. The majority of such spalls in the sample were used as cutting or gouging tools, and show chippage and wear from use at a tip or along a steep edge. Another chip form is quite distinctive, although not abundant. It is thin and broad, rectangular in cross-section, with square edges; and the flat faces are almost perfectly parallel, with a bulb of percussion following almost exactly the contour of the scar (negative side) of a bulb of percussion, on the opposite face, left by a previously removed chip. These sheet-like chips suggest that flaking control was sufficient to split a chert block into shingle-like slabs. One such chip was used as a scraper, but most were not utilized, and were probably a product of preliminary shaping of tools or cores.

The most abundant chips are prismatic flakes, mainly in two sizes. The larger ones are about a quarter to a third of an inch wide, and up to two inches long (based on fragments), triangular or trapezoidal in cross-section, and thinner than almost any of the Hopewell or Mexican flake knives (pl. 3, nos. 1–3, 8–11, 13). They show a very slightly elevated and broad bulb of percussion, very difficult to define on many specimens.

The plane face on many has strong concentric strain waves (oyster-shell surface) along the whole blade, concentric to the bulb of percussion, and many of these chips ended at a hinge fracture. Some of these chips are short and not especially distinctive, and were formed in the thinning and shaping of tools. Others are fragments of long and carefully drawn bladelets, and resemble channel flakes except that they lack cross-flaking on the convex face. Many of these more typical flake knife fragments show chipping and wear along the edges and at a tip. Striking platform remnants on many of these flakes show much bruising and splintering, apparently a result of the particular flaking technique used. Exhausted cores from which such flakes could have been struck were found. Very few of these longer flakes curve but have a plane face that is almost flat.

Smaller prismatic flakes are the most abundant chip-form on the site, and are the retouch flakes from projectile points and scrapers. They are almost all triangular in cross-section, a sixteenth to a quarter of an inch wide, proportionately thicker than the flake knives, and often somewhat curved. Edges are surprisingly parallel, a bulb of percussion is very slightly developed, and there is very little taper or irregularity from the thick edge to the end of the flake. These flakes correspond well with the flake-scars on the fluted points, and many of them also seem to be the result of trimming and reshaping the scrapers described later. A few of the larger ones were used as tools without retouching (pl. 3, nos. 2, 11, 13).

Other more irregular flakes and spalls occur, but they are less abundant and seem to be extremes of these types. Several details concerning the chipping seem noteworthy. There is a high proportion of flakes ending at a hinge fracture, generally at the end of a long, flat flake rather than an acutely tapering one. Often hinge-fractured flakes, as well as others, show a concentric wave-like surface concentric to the point of impact. These details are especially conspicuous in the channel-flake scars of fluted points from all parts of the Northeast, but at this site they are more conspicuous in blade-making and tool shaping. In contrast, Hopewell blade-elaboration from polyhedral cores resulted in flat plane surfaces and few hinge fractures. Certain types of flakes are absent at the Shoop Site; for example, the tiny sheetlike pressure-flakes typical of late horizons and the very large, flat, broad type of flake most distinctive of the soapstone vessel horizon in the Susquehanna Valley. The random, irregular type of flaking found on Late Archaic sites and the thick, flat flakes which taper almost from the striking platform, typical of lower Susquehanna quartzite industries, are lacking. Large chips of any sort are infrequent, and the ones found are usually either flake knives or the thick spall tools first described. The majority of larger flakes represent tools rather than a mere by-product of tool-making. The flaking does not resemble that done by either stone or antler tools, and I suspect that it was done by both percussion and pressure with tools of fresh bone, judging by my own experiments.

The pattern of secondary chipping is best illustrated in the side scrapers, although it is equally characteristic of the other tool types. This pattern is frequently disguised by resharpening and re-edging, but shows best on some of the less-used specimens (pl. 2, nos. 13 and 16; pl. 3, no. 28, for example). Chipping along an edge was not sequential, nor were alternate chips drawn from opposite faces of a biface tool. Instead, two chips were removed along an edge, with a space of an eighth to a third of an inch between the striking platforms, and then a chip drawn between them, removing part of the two earlier flake scars. Then another chip would be removed farther along the edge, and the next chip removed from the space between that scar and the sequence previously chipped. This is a technique basic to the whole Enterline Chert Industry, not so much clearly defined on a few distinctive specimens as consistently shown by the whole series of blade tools and projectile points. This technique is basically distinct from stepwise, sequential flaking as exampled in the Lindenmeier Industry, and also contrasts with alternating-face chipping as seen in many Indian industries. Many lithic industries, indeed, show little preference and include examples of several different chipping patterns, but the Enterline Industry does not include clear-cut examples of any other sequence.

I think the broad relationships of this procedure are of some significance. I have already noted the lamellar nature of the retouch flakes from the site which are a result of this type of chipping. In the Enterline Chert Industry, the basic pattern in chipping is a blade and core procedure, whether the application was to blade-making, channel flaking, or secondary chipping on blades and on biface tools. It would be too much to claim that the secondary chipping technique was derived from a

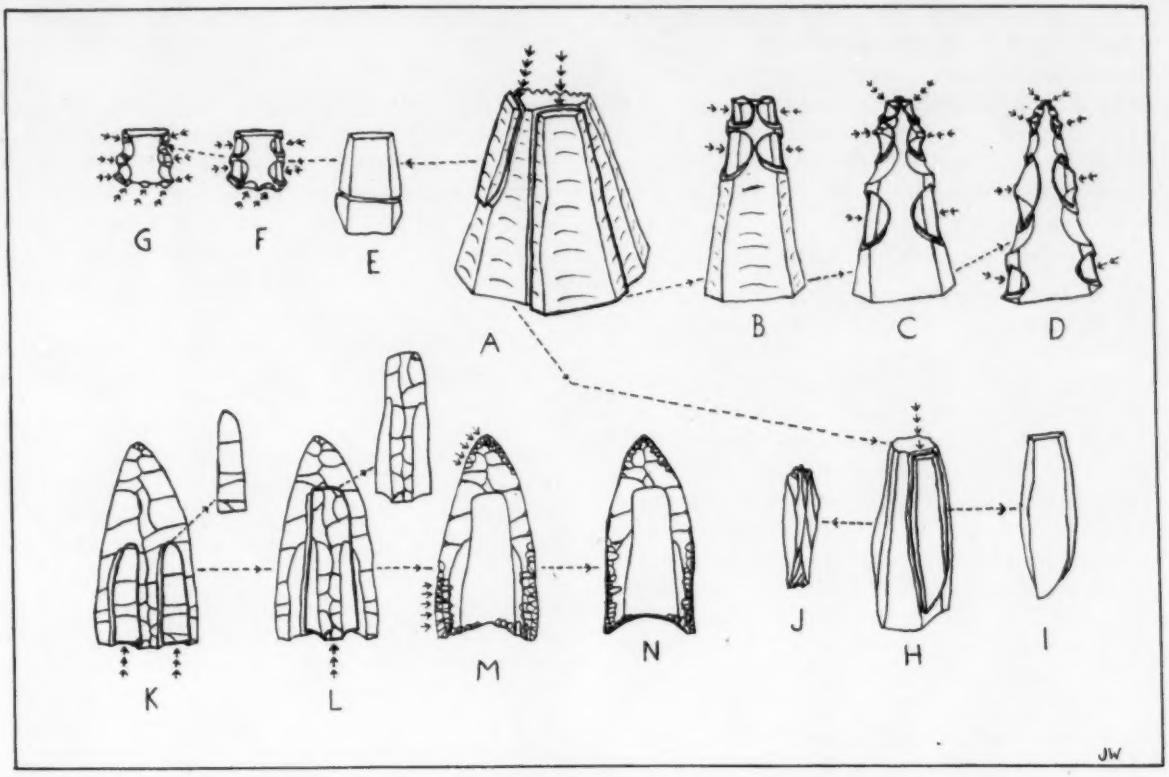


FIG. 2. Idealized sketch of the flint-chipping industry of the Enterline Chert Industry. Larger flakes are drawn slightly displaced from their positions of origin on the tool, as though being struck off. Multiple arrows represent the direction and percussion-point of the blow by which each flake was removed. *A* represents the removal of blades from a polyhedral core, probably of more regular shape than most of those actually used. This is a reconstruction since no prepared and unused cores have yet been found. *B*, *C*, and *D* represent the shaping of a pointed end scraper from a blade by alternate flaking, prior to the final pressure retouch of the edges (which is not indicated). Flakes drawn are larger and thicker than most of those actually removed. *E*, *F*, and *G* represent the shaping of an end scraper from a blade-base by alternate chipping, prior to the final edge-retouch. *H* represents a partially exhausted core, from which blades have been removed earlier, and which now serves as a source for flake knives or bladelets. *I* is a flake knife removed from a core of this type, used as a cutting tool without further modification. *J* is the final nucleus of the exhausted core, from which flake knives have been removed until it became too small to serve as a flake source. *K*, *L*, *M*, and *N* represent the elaboration of a fluted point from a blank. *K* shows the removal of the two side channel flakes in preparation for the final flute, and *L* shows the removal of the final flute from the faceted area prepared in *K*. Both types of channel flakes removed are also drawn separately. *M* represents the final shaping of the tip and base of the point by pressing off small flakes, and *N* shows the final projectile point as modified by pressure retouching and the grinding of the basal edges.

blade and core tradition, but it is consistent with this tradition. At the Shoop Site, the basic procedure involved the making of facets and the drawing of faceted flakes in a surprisingly consistent fashion, whether the flakes were large blades or small retouch flakes. In this respect, the Enterline Chert Industry is a remarkably clear-cut blade industry, of a pattern which is totally new for the Eastern Woodlands and perhaps for the whole United States and Canada.

Sometimes cores were damaged by hinge fracture during blade removal, and blades and core fragments which show this type of failure are included in the sample. One of the nuclei from the site (pl. 4, no. 11) was broken by a hinge fracture, and the thin tip thus produced on the core used as an end-tool. Several flakes have a facet pattern which shows that they were removed from a core after it had been broken by this type of fracture. The illustrated example was used as a knife or sidescraper without secondary flaking (pl. 3, no. 12). This breakage of cores was the same accident to which fluted points were prone during channel flaking. Such hinging in core re-

duction is believed to be a fair diagnostic of the Enterline Industry. The only other site where I have found such hinge-broken core fragments and blades is the workshop immediately east of the jasper quarries at Vera Cruz, Lehigh County, Pennsylvania, where two fluted points and a few scrapers of the Enterline Industry have also been found.

## CORES AND BURIN-LIKE TOOLS

Peculiar flint fragments representing cores and used flint scrap are not burins in any sense of the term, but show rather curious resemblances to the Old World tool type in form and usage. In use they are apparently related to fourteen small pointed spalls of triangular cross-section which were accidental by-products of flake knife manufacture but which were used for engraving or gouging (pl. 4, no. 3). The five nuclei are the used-up remnants of polyhedral or cylindrical flint cores from which lamellar flakes were struck (pl. 4, nos. 9–11). They have been used as flake sources far beyond what I would have guessed was their exhaustion; much more than any Mexican or Hopewellian nuclei that I have seen. At their present stage, all traces of a striking platform have been chipped away at both ends, and the cores have even been shortened by flake removal after the flat ends were gone. The final flakes drawn from them were short and tiny for any blade industry, and were near the lower limit of size for any usable flake tool. Finally, the sharp ends of these tiny splinters from the centers of cores were used as pointed tools for gouging, and show wear and chipping from use. These cannot be anything but the exhausted nuclei from cores, but they are at so extreme a stage of wastage that I hesitate to compare them with any normal cores of other industries, in view of the absence in our samples of any core discarded while still usable as a flake source. The flake knives described earlier must have been struck from such cores before they became so reduced in size. Very likely large cores of pyramidal form, incompletely shaped from nodules with some of the crust remaining, were the sources from which were struck the heavy blades used for scrapers. After they had been much reduced in size, the smaller core remnants were used as a source for bladelets for flake knives, until finally the cores were so reduced that even small slivers could not be removed from them; this is the only stage at which they are found in our sample (the blade-making sequence is outlined in fig. 2).

The blades and flake tools show some details of the cores from which they were derived, and it appears that the first blades removed from the cores were the large slivers used as scrapers, and that flake knives were generally removed from the same cores at a later stage, when the core was reduced in size. The number of blades with a nodule skin preserved as one edge (instead of a facet) shows that the cores were not completely cylindrical or conical forms but were segments of a truncated cone or of a cylinder (pl. 3, no. 29, 30). Onondaga chert is not available as large blocks at the outcrops, and the blocks available would only have been large enough to shape faceted core faces on a part of the block. The facet angles on the blades indicate that such cores would have originally been two to five inches in diameter. Striking platform remnants on the blades are not perpendicular to the axis of the blade, and the blade facets frequently taper. This suggests their derivation from a core which was truncated-conical or biconical in form rather than cylindrical, with flakes drawn from the smaller end of the core. As the core was reduced by the removal of tapered blades, the core would become more cylindrical in form and better adapted to bladelet manufacture.

The other peculiar gouging tools are four flat spalls which have been splintered away at the corners in somewhat the fashion of a burin. The flake scars at these corners do not show the negative bulb of percussion characteristic of the re-

### NOTES ON PLATE III

1, 3, 5, 7, 9, 10, 12, 13, 14, 18, 19, 20, 21, 22, 29. Pennsylvania State Museum Collection.

2 4, 6, 8, 11, 15, 16, 17, 23, 28, 30. Frank Soday Collection.

28. Pennsylvania Jasper, 30 brown chert, rest are Onondaga Chert.

1. Channel flake fragment used as flake knife, with bulb of percussion (base) at upper end.

2–11, 13. Flake knives, showing range of size, pattern, and retouch. Fragments are arranged with all percussion-point ends oriented to the top. 3 has been fire-shattered at the center, and the mid-part has not been found. All other specimens are fragments.

12. Short blade drawn from a core previously hinge fractured; face shows the negative scar of the hinging flake. Used as a knife or scraper at the side edges, but not modified by secondary chipping.

14–30. Side scrapers and fragments. 29 and 30 have an old nodule surface along one edge. 24, 26, and 29 were shaped with the point at the end of the blade opposite the percussion point, and are non-typical in this respect. 14, 21, and 26 show recent damage from farming implements. 22 shows a well-defined graver at the lower left end, and a probable worn-out graver tip on the base nearby.

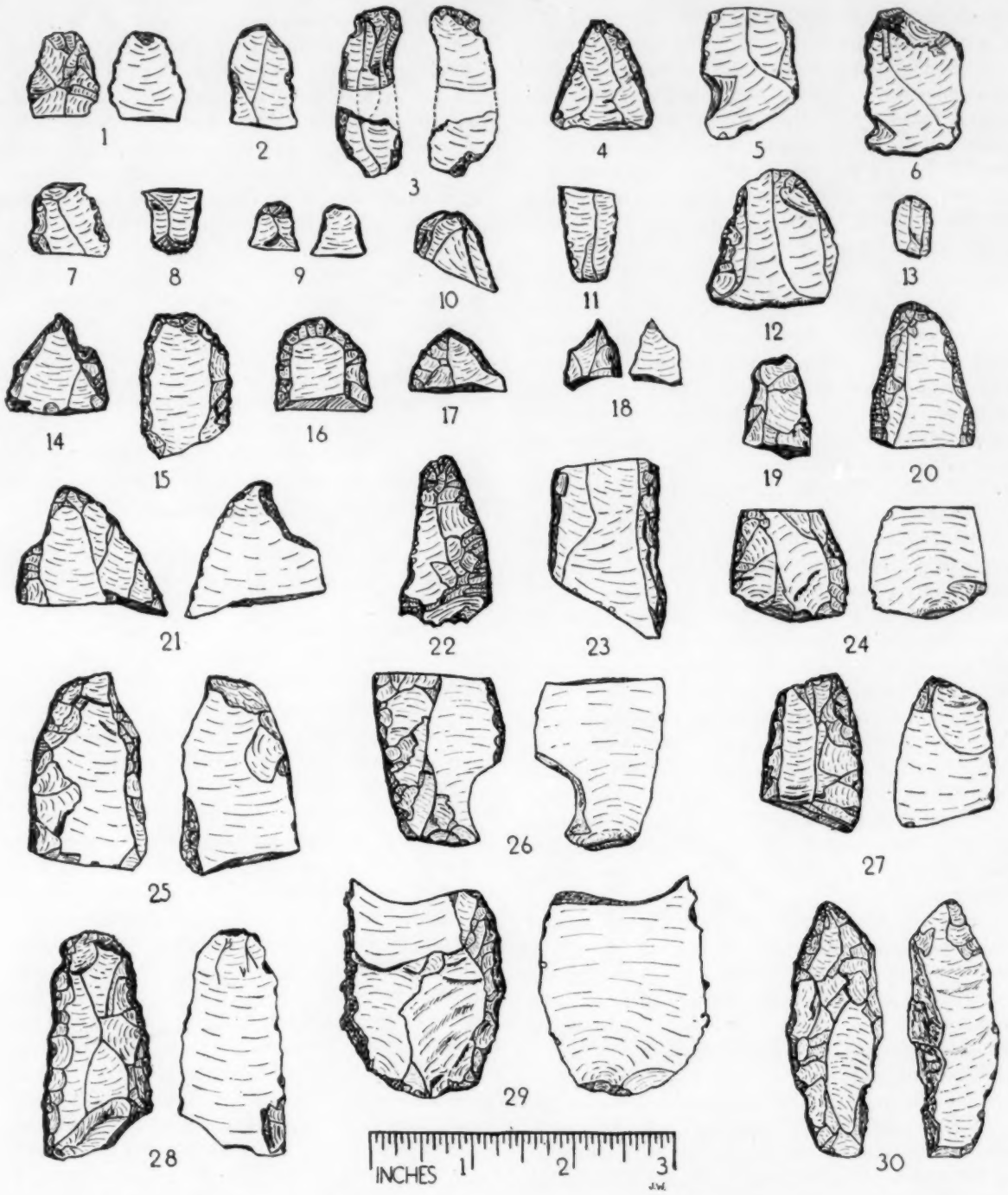


PLATE 3. Flake knives and side scrapers from the Shoop Site.

moval of a burin flake, and so the form is not the result of a burin technique but of force applied to the corner of the tool in a diffuse fashion during use as a gouging tool. I am certain that these resemblances to burins are superficial and accidental, although I am hesitant to describe our forms on the basis of such a small sample (pl. 4, nos. 1, 2). They are illustrated in the hope that related sites may produce less ambiguous examples, or that better interpretation may throw more light on these odd forms.

## SCRAPERS

Scrapers of two types were based on heavier lamellar flakes. The evidence of used edges shows that neither type was hafted. The more striking of these are pointed tools, an inch to three inches long, steeply retouched on the two long edges and generally at the tip (pl. 2, nos. 11, 15–17; pl. 3, nos. 14–30). The lower, plane side of the flake is flat and unmodified; remnants of the bulb of percussion are generally at the point rather than at the broad end of the tool. These tips have been retouched so that the elevation of the bulb is at the working end, and the lower face back of the tip is concave. The flakes themselves are generally somewhat curved, although a few are nearly flat. The blade on which these scrapers were based is almost always trapezoidal in cross-section, although some were triangular and some were simple spalls. Edge-retouching is extensive and steep (fifty to sixty degrees), and the blade itself is proportionately much thicker than are the flake knives. These were scraping and gouging rather than cutting tools, and worn specimens show greater use and breakage at the tip than along the retouched edges. In this respect they are related to the heavy utilized spalls found on the site. The sample available, from Gordon's, Soday's, and my collections, includes eighty-eight of these long scrapers and distinctive fragments, not including tiny tip fragments and small sections.

These side scrapers make up a somewhat variable blade series, in which the crude extremes are less numerous. Simple spalls of large size were sometimes retouched along one edge, without shaping the top or all of the edges; these variants and fragments apparently broken from them are not well represented in our collections (pl. 3, no. 22). The average side scraper was based on a carefully drawn flake of tapered lamellar form, generally with the bulb of percussion at the narrow end. The broad end was rarely modified, but the narrow end was worked down to a sharp, acute tip. This tip has been broken away on most of the blades, but a number of intact tip fragments have been found (pl. 3, no. 18). Some examples have a straight scraper bevel chipped across the tip, and may represent the reshaping of pointed side scrapers after the tips had been damaged (pl. 3, no. 15). The usual scrapers were retouched to a steep bevel along both edges, whereas those based on spalls usually have one edge steeply retouched and the other edge thin and chipped only by usage as a knife. Rougher spall scrapers frequently have a nodule surface preserved at one edge (pl. 3, nos. 29, 30). Even without extreme examples, the typical scrapers represent a blade tradition otherwise unknown in the Northeast but very familiar in many Old World cultures. A few examples were based on lamellar flakes which come so close to the ideal pattern and execution that they would be difficult to distinguish from fine specimens of some of the classic European blade industries (pl. 2, nos. 13, 16, 17). The smaller end scrapers were based on the same blade forms, and some of them also have a startling Old World appearance.

The other scraper form, a short end scraper or planer, is the preponderant artifact in our series, more abundant than the total of other artifacts on the site. Two hundred and four of these from the Shoop Site have been examined. They were made from short, thick lamellar flakes, often as broad as long, which must have closely resembled a modern European gunflint (although slightly thicker, and not like the older wedge-shaped gunflint) (pl. 4, nos. 13–35). Sometimes they were trimmed by longitudinal flaking, but generally were only retouched to shape. Typically they are trianguloid or rectangular, while a few are somewhat irregular in shape. The plane faces are unmodified and the bulbs of percussion are almost always at the back (non-working) end, in contrast to the long side scrapers. The working edge has a steep retouch (sixty to ninety degrees) formed by parallel, fine, long flaking. The retouch on the other edges is less regular, broader, less steep, and left a blunter edge. None show evidence of hafting. Surprisingly few of these scrapers show evidence of wear, but several show remnants of a worn edge which had not been resharpened. I have seen very few scrapers which resemble these in other Pennsylvania collections; the flake-form on which they are based and the flat, parallel type of retouch flaking seem especially distinctive.

Trianguloid specimens, based on short tapering flakes, are triangular or trapezoidal in cross-section, and have one major working edge, which was steeply retouched and apparently resharpened until the slope of the scraping bevel became too steep. The bulb ends of these flakes are generally not modified by secondary chipping, and the sides are much less retouched than the ends, and are often somewhat irregular (pl. 4, nos. 14, 19, 20, 24, 30, 31). A few have roughly concave edges, which appear to be accidental results of use rather than an adaptation to hafting. Strongly developed points at the front corners of some examples appear to be important details of these tools, and are discussed later. Although the lateral edges do not appear to have been intended as primary working edges, some of them have had chips driven off the lower edge, along the plane face of the scraper, by use as tools. Some of the trianguloid end scrapers are carefully chipped on all edges, and three are long and narrow (pl. 4, nos. 20, 29).

Rectanguloid specimens are almost all trapezoidal in cross-section, and are frequently thin compared to the trianguloid forms. Many of them show less resharpening. They were generally based on a more pronounced lamellar blade, and some are almost classic examples of a short blade industry of this type (pl. 4, nos. 17, 18, 25, 27). Typically, scrapers of this form have a back margin that is not retouched or that is chipped like the lateral edges. Seven specimens have scraping bevels as well developed at both ends (pl. 4, nos. 17, 18, 29, 32, 33). One of these, a sharply-defined blade tool of a peculiar non-local chert previously discussed, has an oblique scraper edge with an acute worn point at one end (pl. 4, no. 18). The rectangular forms have the same sharp corners developed on some specimens and the same chipping differences between primary working and lateral edges as do the trianguloid forms. The only differences between them are due to the shape of the flake on which they were based and the degree of resharpening.

Very few of these scrapers show worn edges, but three of them have been partially resharpened without obliterating all of the earlier worn edge (pl. 3, no. 28). Several have had their beveled edges rechipped until they form an angle of slightly more than ninety degrees with the plane face of the tool, and were apparently beyond salvage by re-edging (pl. 4, nos. 16, 21, 25). I believe the majority of the small chips at the Shoop Site were a result of the resharpening of scrapers and fluted points, rather than of the manufacture of tools. The majority flake type at the site could be the retouch flake from these scrapers. Six chips were produced by thinning the edge of a scraper which had become too obtuse for resharpening; they are small lens-shaped spalls with one plane face and a convex face which shows the fine flaking and battered edge of a chipped-back scraper bevel (pl. 4, nos. 4, 5). Irregularities on some scraper edges could have been the result of such preparation for resharpening.

## GRAVERS

Compared to the western Folsom sites, gravers are anything but conspicuous in any northeastern complex (except at St 4, described elsewhere). No examples were included in Gordon's collection or in our earlier collections from the Shoop Site, but eight examples eventually turned up. A specimen found by Soday is a thin flake with a tiny projecting point on a thin edge, which was irregularly retouched from one face (pl. 4, no. 7). Other projecting areas of this edge have been broken away by use, and the graver would appear to have been reshaped with wear and breakage. The actual graving tip was shaped by retouching from one plane face of the chip only. Another specimen in Soday's collection has an acute point at the end of a short flake, first shaped by retouching from the plane face of the flake (pl. 4, no. 8). The tip has been resharpened by chipping from the convex face, and shows a blunted thick end with worn facets. Two specimens found by Witthoft, one of them fragmentary, have a projecting tip on a flake edge shaped by retouching from the plane face (pl. 4, no. 6). Other possible graver fragments have been found, but are too badly damaged by breakage to be identified with any certainty.

Graver points also occur on other tools, and all represent the same type of retouch from one face, although the general appearance of most suspected examples is quite different. One side scraper, found by Witthoft, has a well-preserved graver worked at a corner of the blade at the edge which was least retouched and used (pl. 3, no. 22). Other side scrapers bear similar projections, so chipped away and damaged that their identification as gravers is not certain. The tips of these side scrapers present strong resemblances to gravers except for size and thickness; most of the extreme ends of these scrapers were broken away in use, often with a sloping, hinging fracture which indicates breakage under heavy stress. Very few of

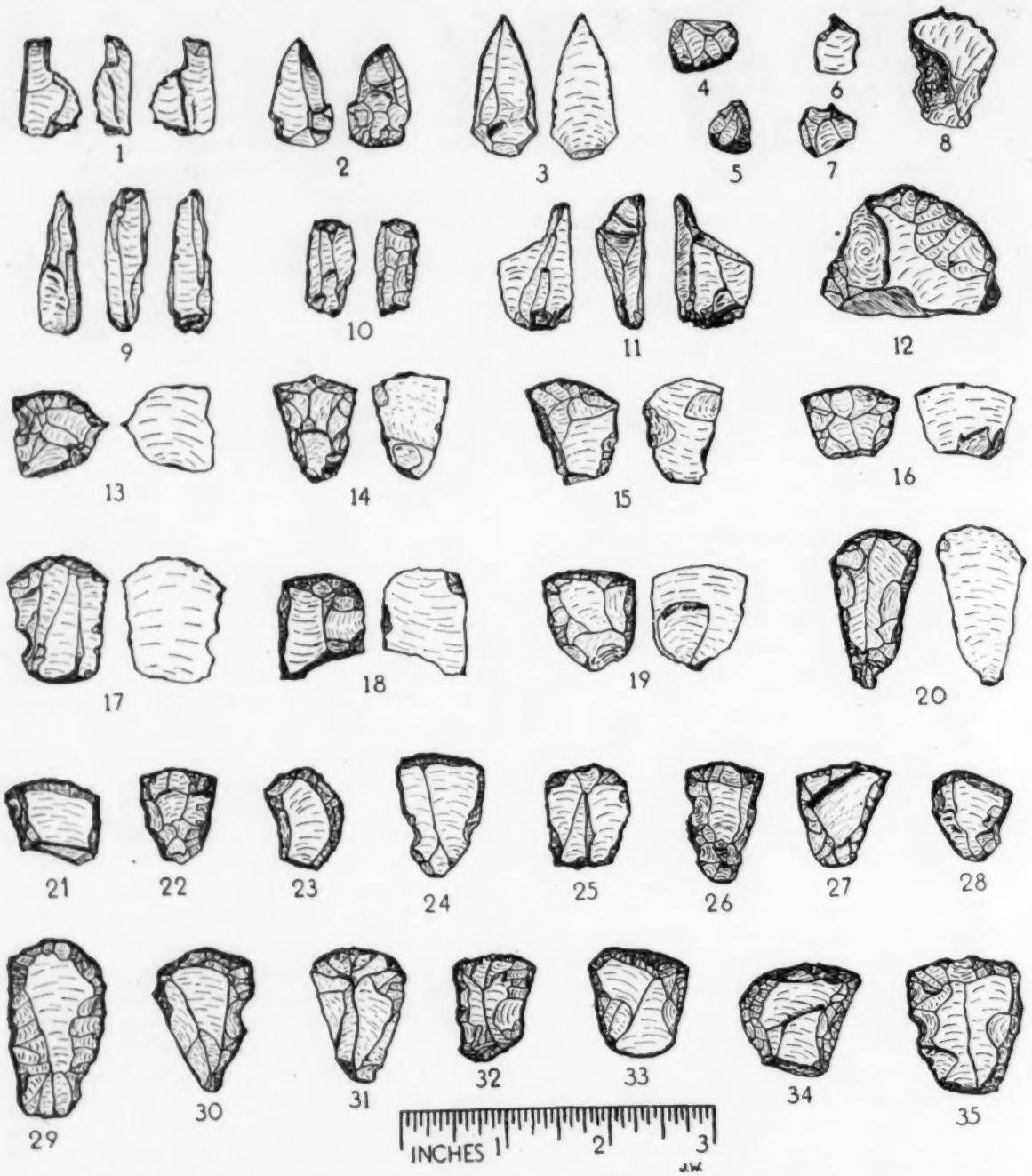


PLATE 4. Flake tools and end scrapers from the Shoop Site.

these scrapers have been found with the tip intact, but fifteen of the acutely tapered, sharp tips broken from them have been found (pl. 3, no. 18). The character of these tips is discussed in my description of the side scrapers.

Forty of the end scrapers show working corners which probably represent a graver variant. These right-angled or somewhat acute points were worked at the ends of the broadest beveled face of the scraper, and their shaping was an integral part of the shaping of the scraping edge, not a later modification. Often edges immediately adjacent to them are somewhat concave. Almost all examples show breakage and wear from use and must have been more acute and graver-like when shaped. A single example, collected by Soday, has an apparently intact tip, acute and poorly supported (pl. 4, no. 13). The others are probably worn-out and rechipped, or less extreme, examples; judging by evidence of use-breakage, they were an important feature of many of the other end scrapers (pl. 4, nos. 14, 15, 18, 21, 22, 26, 27, 32, 34).

## UNFINISHED FLUTED POINTS

Twelve broken blanks and rejects have been found on the site and cast considerable light on procedures in finishing fluted points (pl. 2, nos. 2, 3, 5–9). These blanks are apparently finished to the point where channel-flake removal was in process. Three of these were broken by the removal of a channel-flake which ended in a hinge fracture which penetrated through the blank, rather than breaking up to the nearer surface (pl. 2, nos. 3, 6, 7). Another blank split obliquely along a vein, during or after the removal of one preliminary channel-flake, and was retouched as a cutting or scraping tool (pl. 2, no. 10). Four others had had at least one final channel-flake apiece removed before breakage, and one in particular shows five such longitudinal flake scars (pl. 2, no. 6). These unfinished pieces appear to represent the blank forms or "cache blades," made up at some distant quarry site and carried in unfinished form until shortly before they were needed.

One's first impression of these blanks is that they are thick and coarsely chipped as compared to finished fluted points. Chipping is of the finer, long, somewhat parallel type on only two specimens, while more random flat chipping, short, irregular edge work, and long flat flaking are equally conspicuous on the others. Of course, finished fluted points from other sites usually show some of this random work, and shape of flake varied with the type of core reduction necessary at each point in the work. Parallel flaking seems to have been used for the even thinning of a blank, random flaking for rougher shaping from more irregular contours.

The basal ends of the blanks show no preparation of a well-defined nipple for a striking platform, but rather are slightly convex with a thick, blunt angle at the edge. These blanks were thinned by longitudinal flaking from this base, and the rejects indicate that finished points do not retain all of the surface prepared by longitudinal flaking. Eastern fluted points often show two channel flakes on a face, but the blanks show traces of other longitudinal flaking which preceded the final channel flakes and the last transverse chipping of the final surface. Some longitudinal flaking was obliterated by later chipping, in the point-shaping process. Our blanks and finished points show the processes of a peculiar chipping sequence which is characteristic of fluting in this industry, and which is discussed at greater length later. This is the triple channel flake pattern, in which two preliminary channel flakes were drawn and then the final channel flake drawn between them (fig. 2).

The basal halves of two unfinished fluted points, advanced well beyond the blank stage, are perhaps the most interesting specimens in Soday's collection from this site. The large example (pl. 2, no.

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NOTES ON PLATE IV

1, 3, 4, 5, 6, 8, 10, 11, 13, 14, 15, 18, 20, 22, 23, 29, 30, 31, 35. Soday Collection.

2, 7, 9, 12, 16, 17, 19, 21, 25, 26, 27, 28, 32, 33. Pennsylvania State Museum Collection.

24, 34. Gordon Collection.

12. Pennsylvania Jasper, 18 dark brown chert of unknown source, 29 white quartzite-like chert of unknown source, rest are Onondaga Chert.

1, 2. End tools with burin-like tip.

3. Pointed flake knife used as end-tool.

4, 5. Spalls struck off end scrapers during resharpening. These show a part of the upper plane of the scraper-blade at the top, and the blunted, splintered edge of the scraper bevel at the bottom, with a trace of the lower plane of the blade back of this. These flakes were removed by a blow to the bottom face of the scraper immediately back of the beveled edge.

6–8. Gravers chipped from one face of a thin flake.

9–11. Exhausted nuclei from cores, used as end-tools after they were discarded as cores. 11 has been broken by hinge fracture from one of the flakes drawn from it.

12. Rough spall scraper, found as two pieces.

13–35. End scrapers.

2) was based on a thick blank and had been completed to the stage where the final channel flakes were being drawn. Three channel flakes on each face represent a thinning stage immediately preliminary to the final secondary chipping. One face shows a remnant of a still earlier channel flake scar, crossed by a long transverse flake scar. On each side of the central channel flakes, two long longitudinal flakes had been drawn earlier to thin the base and even up the basal edges. The point broke by hinge fracture as the last channel flake was drawn. Many of the finished points show traces of the secondary longitudinal flakes of this stage, not entirely obliterated by later chipping, and slight traces of these earlier channel flake scars are sometimes preserved on finished points (as pl. 1, nos. 3, 4, 6, 16, 17, 19, 20). The basal edge was then retouched to straighten the serrations produced by the three longitudinal flakes last drawn from each face. The transverse flaking of this unfinished point is broad and even, and the flaking of this stage is preserved on finished specimens as the flake scars adjacent to the channel but not running to the edge of the tool. The side edges of this specimen have been straightened by retouching, but the final flaking stage, which would blunt the edges of the basal half of the point, had not been started. The point shows no trace of basal or tang grinding. The other specimen (pl. 2, no. 4) was broken after the removal of a final channel flake from one face; except for this and further basal retouching, it is at the same chipping stage as the other point. However, the somewhat concave base has a central scraper-like projection which was apparently prepared as a striking platform for the removal of the other channel flake. This projection is much like the basal nipple from which channel flakes were struck in the High Plains Folsom technique, but was shaped by chipping from only one face of the blank. This specimen is of unusual interest because an earlier channel flake was drawn from the tip end of the blank. The basal retouching on this specimen appears to have been done instead of fluting, to prepare an edge for the striking off of the second of the channel flakes, but shows no suggestion of the use of any projection. I have seen no other specimen from the East which shows this distinctive nipple-like base, but this second specimen is the only example known at this stage in the shaping process, and such preparation may have been used only sporadically for channel flake removal. It certainly was not a basic part of the longitudinal flaking as illustrated on the blank fragments.

The blanks from which the fluted points were made were thick leaf-shaped quarry products which had apparently been chipped from heavy spalls. These blanks were reduced by alternate stages of transverse flaking and longitudinal flaking, until they were thin, symmetrically shaped, and straight based. The number of chipping stages probably varied with the thickness of the original blank. At this point, the refined blank was sometimes partly fluted but was to be still more deeply channeled by further longitudinal flaking. The fore part of the blank was nearly finished, with even if somewhat random flaking and straight edges, and often a medial ridge, but lacked the final tip retouch. The base was not yet concave. Two smaller channel flakes near the corners were then drawn; these defined the surface contours of the ears, left a basal projection, and formed grooves along edges of the final channel flake site. The tang edges still lacked the final retouch. At this point in the process, the final channel flakes were drawn, often obliterating all traces of earlier ones. Then the tang edges and basal edges were retouched to their final outline, obliterating most of the earlier longitudinal flake scars at the ears alongside of the flutes. Basal and tang edges were ground and the tip delicately retouched to a slightly rounded but thin edge. Later tip breakage from use probably led to further retouching of the tip and to the blunter, more round-tipped form of many of the finished points. A finished but unused tip is also illustrated (pl. 2, no. 1).

One of the most significant features which the Shoop blanks and fluted points present is the multiple channel flake pattern of the final chipping stage. Earlier longitudinal flaking was merely a rough shaping technique, but the final sequence is an important clue to the relationships of the Enterline Chert Industry. When the thick-based blank had been roughed out and the preliminary shaping completed, basal thinning was started. In most cases, this began with the removal of two smaller channel flakes from one face of the blank, by blows midway between the center of the blank base and the basal corners. In some cases, as in pl. 2, nos. 4 and 7, these flakes were small, but on other examples they are quite large. The removal of these flakes served to isolate the central part of the base as a striking platform for removal of the central channel flake. In many cases the removal of this central flake obliterated all traces of the smaller flutes, but very often conspicuous remnants of one or both were left on the finished point. In so pre-

paring the blank for the removal of the central channel flake, the flint knapper was applying core and blade technique to a bifaced tool, preparing the blank as though he were shaping the faces on a faceted core before and during the manufacture of lamellar flakes (fig. 2). This contrasts with High Plains Folsom technique, in which a nipple at the middle of the base was retouched to shape and used as a striking platform for the removal of a single channel flake. Channel flaking is obviously a new and distinct application of blade technique to a bifaced tool, and the Shoop points are intermediary between Folsom technique and its core and blade background; they provide a prototype for the Folsom point. This triple channel flake pattern is the explanation for the multiple flutes on so many eastern fluted points; rather than a degenerate Folsom technology, they represent a prototypic form closer to an ancestral blade tradition. This interpretation gains weight from the conspicuous presence of the same triple channel flake pattern on several of the very few fluted points so far found in Alaska. Likewise, this trend from an Old World blade technology to the Enterline Chert Industry to the Folsom-Lindenmeier Industry holds for each of the tool classes involved; it is as conspicuous for the scraper forms and flake knives discussed earlier as it is for the fluted points, and the type of retouch chipping on the Enterline tools is of the same basic pattern.

## KNIVES AND OTHER BIFACE TOOLS

A few tools chipped on both faces, which were not projectile points, are present in the collections, but they are so poorly represented that I hesitate to describe them. One is apparently the base of an ovate knife of Onondaga chert, with used edges and one fire-spalled face (pl. 2, no. 14). One face shows a poorly developed channel flake, but the blade was not a blank for point manufacture. Other bifaces, represented by three specimens and five fragments, were apparently pieces of quarry refuse, blanks spoiled in the shaping but carried along anyway and used as rough scraping and cutting tools. One of these (pl. 2, no. 11) shows two failures in the control of channel flaking, and the battered edges from which the flutes were attempted are some of the best examples of the bruising of the flint incidental to channel flake production. One edge of this fragment was chipped to a scraper edge, and other edges show slight use. Other fragments of similar rejects were used without such scraper modification (pl. 2, no. 10). Another puzzling fragment appears to have been split from a blank in an attempt to draw a channel flake and shows both the positive and negative scars of the bulb of percussion of a shattering channel flake (pl. 2, no. 12); it was apparently used as a knife, much as ordinary chips with sharp edges were utilized without retouching. This specimen presents a remarkable parallel to Lavellois technique (as of course channel flaking does, to a lesser extent), but the resemblance is, I believe, fortuitous. These few fragments suggest that knives of more conventional types are still to be discovered in the Enterline Chert Industry.

## PROJECTILE POINTS

Of the forty-eight fluted points and distinctive fragments from the site, twenty-six include at least half of the base and sixteen are whole or virtually intact. The largest specimen is of brown jasper, and is two and three-eighths inches long (pl. 1, no. 20). The other jasper specimen, a basal half, was somewhat larger (pl. 1, no. 19). The smallest Onondaga chert example is one and a half inches long, with a pentagonal outline, and is proportionately broad (pl. 1, no. 6). The shorter specimens all have a somewhat broad, stumpy appearance, and probably have had broken tips retouched. One point has the narrowest proportions and the least concave base of any fluted point I have seen (pl. 1, no. 2). Several show spalling and breakage tangent to a surface near the tip; the result of tip impact of a projectile point (pl. 1, nos. 4, 5, 12, 16, 18, 19). Seven have their greatest width at the base; the remainder are widest near the midpoint of the tool.

Despite differences in size and contour within our series, all specimens (and fragments preserving the part involved) show the following characteristics: fluting on both faces; concave base; fine retouching and smoothing on edge of concave base; slight concavity of side edges near base; fine retouching and smoothing of at least half of this concavity, extending to the ears; rounding and dulling of ears; convex edge of half of point toward tip, in parabolic outline, with convexity generally increasing near tip; flat, parallel final flaking almost always perpendicular to the edge, rarely oblique; flat random chipping or obliterated longitudinal flake scars; tips not acutely pointed; forepart of point with medial ridge; thin, finely retouched rounded point. With the exception of the blanks previously discussed, all of these points seem to

have been finished and used, and at least slightly damaged in use.

The degree of basal concavity seems to be proportional to the extent of the fluting on each point, and is probably a factor of this type of thinning. These bases, and the side edges nearby, were carefully shaped, with minute chipping and with grinding or smoothing, to an even concave edge, recurving to the ears. One fragment (pl. 1, no. 10, previously mentioned) shows a double-concave side edge which I have never seen elsewhere. The other half of this base, found since, has the same bi-concave edge. Several points have angularities in basal curve produced by channel flake removal, and these angularities were deep and acute enough so that they are not entirely rounded out and smoothed (pl. 1, nos. 3, 6, 18).

Basal smoothing is an adaptation to hafting, and is, as far as I know, always present on northeastern fluted points. Basal smoothing is not, by itself, a diagnostic of any particular importance, but in association with certain point shapes and types of chipping it is a detail of some significance in our local area (New York, Pennsylvania, Delaware, and New Jersey). It occurs on a great variety of point forms, in such Late Archaic cultures as the Laurentian and Early Coastal complexes and in the related pre-pottery complexes of Pennsylvania, with an incidence of one or two per cent. There is only one other complex in which all projectile points have basal smoothing, and that is the complex of the soapstone vessel period, which I have labeled the Transitional Period, in the Susquehanna, the Schuylkill, and the central New York areas.[12] Points of this period are very broad, taper-shoulder, semi-lozonge forms (called "butterflies" by some Pennsylvania collectors), with a constricted stem and heavy tang smoothing. Thus even in the same area, an unrelated culture at a different time period practiced extensive basal smoothing on projectile points. However, locally, basal smoothing seems to be entirely restricted to the fluted point, the Late Archaic, and the Transitional complexes. This type of tang finish, with good functional reasons, rarely implies relationship between complexes. In our assemblage (and also in the Transitional complexes) it may have additional significance. Tool forms adapted to shaft-finishing are absent here, and, especially, concave-edged scrapers are missing at the Shoop Site. Quite possibly the finished projectile point itself served as such an implement, and the smoothed edges were not only a desirable hafting feature, but were also, with some of their accompanying minute retouch, a by-product of shaft-making. Our only other culture (Transitional), with all projectile points similarly finished, is a complex with exceedingly few scrapers and none adapted to shaft working.

Fluting varies considerably, from those with slight basal thinning (pl. 1, nos. 7, 8, 9) to examples with channels not quite as large as those seen on some local jasper specimens (pl. 1, nos. 3, 12, 17). Our series shows twenty-three channel flake scars which ended at hinge fractures, and most of the channel flake scars have a concoidal-waved surface, indicating the difficulty of controlled thinning with the knapping technique by which these points were produced. A negative counterpart of the bulb of percussion, where distinguishable, is almost at the basal edge, and is generally represented merely by the greatest cross-sectional concavity of the groove on one face. A channel flake, when drawn, carried off with it some of the base of the blank and an adjacent portion of the other face, thus determining the basal concavity of the finished point. The face which was fluted first preserves less of the channel flake impression, and that fluted later begins with a more concave bulb area. One specimen (pl. 1, no. 12) shows the removal of a channel flake from the tip end of the blank.

After a blank had been thinned by preliminary fluting the point was shaped and further thinned by chipping from the edges, removing the thickness near the edges which had not been affected by the channel flakes. Some of the chipping at this stage was flat, parallel, and almost stepwise. Greatest changes in outline were made near the tip and at the sides near the base. Edge irregularities were then pressed off, removing tiny triangular chips where the parallel flaking had left serrations. This was followed by the final fluting and another stage of retouching. This final retouch and the extremely minute basal chipping were apparently pressure work, but the rest of the chipping seems to have been hammer work, not done with a stone tool. The projectile points from the Shoop Site fit closely with part of the series of scattered specimens from nearby areas, and show few important variations from type, except that the stray specimens include points of much finer execution than any at the Shoop Site, with

[12] Witthoft, Outline of Pennsylvania Indian History, 10–11.

more pronounced fluting, more regular shapes, and rarer hinge fracture.

This site is therefore to be considered typical of an industry to which many of our stray fluted points pertain. Evidence from other sites indicates that we may profitably look for concentrations of this and other fluted point components, and the frequence of much more expertly made points than any in the Enterline Industry points to one important contrast between our points and some of the longer, more delicately chipped strays. The Big Bend Site, just east of the Shenango River in Mercer County, Pennsylvania, has produced an Onondaga chert fluid point (not entirely finished) and a long side Onondaga chert side scraper, of the type described here.[13] In a previous article, I pointed out the existence of a knife form related to the fluted point, the only two examples of which came from sites which had produced a fluted point each.[14] This knife form has not yet been found at the Shoop Site, and may not be a part of this specific industry, although it certainly is a part of a fluted point complex. Another fluted point, described and illustrated in the same article, comes from a high field, the Wilhelm Site, against the North Mountain in Lebanon County Pennsylvania.[15] This field has a sparse litter of jasper chips, and has since yielded two more jasper fluted points and an Onondaga chert end scraper of the Shoop type, completely worn out. However, it has produced five elaborately retouched concave-edged scrapers, based on large flat jasper flakes, and several finely retouched large triangular flake knives of jasper, which are distinct from any other local types with which I am familiar. These tools are made from very large, thin, flat flakes, with a parallel, beautifully executed retouch suggestive of the best flaking in our stray fluted point series. The scrapers have two or four concave, spokeshave-like, bevelled edges, and other edges are retouched and utilized. I ascribe this site to the Parrish Industry rather than to the Enterline Chert Industry. A site near Shinglehouse, Potter County, Pennsylvania, on the terrace of Twelve Mile Creek, opposite the town, has produced four stumpy fluted points of black flint; the remainder of the material from the site is quartzite, largely lozenge shaped points.[16] Frank Soday calls my attention to the Spidini Site in Wyoming County, Pennsylvania, on which he found two of the short end scrapers and a fluted point of the Enterline complex, of Onondaga chert.

These occurrences, which mean little in themselves, are mentioned here because, in light of the Shoop Site collections, they need further investigation. Any site which has produced a fluted point should be hunted very carefully for weathered tools and chips of Onondaga chert and jasper. Any site with a scattering of deeply weathered Onondaga chert or Pennsylvania jasper chips should be searched intensively for a fluted point industry regardless of how much it may be masked by more intensive later occupations. In terms of possible associations mentioned above, the Enterline Chert Industry is probably not the only industry which includes fluted points, although there may be other tools in the complex which are merely not present in our samples. The geographical location of the Shoop Site, as well as other isolated occurrences, suggests that other sites of fluted point complexes may be found in high, mountainous country, and that they are so far unlocated because they are not in cultivation. The fields in the vicinity of the Shoop Site should produce stray fluted points lost in hunting, but so far none are known. In fact, the nearest occurrence of a fluted point is the terrace-edge within the northern juncture of Armstrong's Creek and the Susquehanna River, six miles as the crow flies from the Shoop Site.[17] Apparently stray fluted points are no more abundant in this sector than elsewhere.

A very important site of the Enterline Chert Industry located in Dinwiddie County, Virginia, has been reported and described by Ben C. McCary, and is of special interest both because of the close relationship of this site to the Shoop Site and because of the circumstances of its discovery and recognition.[18] The discovery of this site was

[13] In the collection of W. J. Hitchcock, Sharpsville, Pennsylvania.

[14] Witthoft, Notes on Pennsylvania fluted points, 52.

[15] *Ibid.*, 53.

[16] Specimens in the collection of Floyd Bliss, Shinglehouse, Penna.

[17] Two specimens in the collection of Frank Neidley, Harrisburg, Penna. One point is of jasper, the other of local rock crystal; the nearest occurrence of an Onondaga chert specimen is represented by a specimen which closely resembles that illustrated in pl. 1, no. 13, found by Neidley at the head of Haldimand's Island, at the mouth of the Juniata. This specimen, which is not waterworn, was found washed out of the sandy loam of an island of the Susquehanna floodplain, and, like two specimens previously described, should be as old as or newer than these deposits (Witthoft, *ibid.*, 53).

[18] Ben C. McCary, A workshop of early man in Dinwiddie County, Virginia, *American Antiquity* **17**: 9–17, 1951. I am very much indebted to McCary for additional information on this site, for access to his collections, and

no accident, but was the fruit of a carefully planned and adequately organized survey carried on over a period of several years by a group of Virginia students. Their first step was the location and description of all known stray fluted points, both in better-known collections and in the small accumulations kept by farmers. Gradually more people were drawn into the search for additional examples, and the first result was a rapid increase in the number of newly-found examples which resulted from the wider knowledge of Paleo-Indian problems among interested local persons. A large body of data on such points accumulated and was published, and the distribution of these stray examples was plotted on maps.[19] Several areas in Virginia showed a remarkably high incidence of stray fluted points, and McCary and his associates reasoned that such areas of concentration were most likely to include actual sites of a fluted point industry, and began intensive site survey work in search for such a site in one area of concentration, Dinwiddie County. This rational approach to a very difficult problem located the Williamson Site, and it is hoped that additional sites will be discovered as the same project continues. Also notable is the manner in which large numbers of people, including collectors, farmers, and many individuals seldom thought of in terms of archeology, have contributed to a body of knowledge which no individual or any small group could have managed. The Williamson family, as an example, have combed their fields almost continuously since the discovery of the site, in the hopes of building up a larger and more reliable sample of the tool types which McCary has been describing and tabulating, solely out of a desire to contribute to the solution of an intellectual problem.

The Williamson Site is long and narrow, following a ridge-top, and its location is analogous to that of the Shoop Site. The industry here is mainly in a variegated local chert, which is infrequent on local Indian sites; the predominant quartzites and silicified stones of the local Indian industries are rare on the Williamson Site. A variety of non-local flints and cherts occurs in small quantities, and the most abundant of these is Pennsylvania jasper, of which the nearest sources are in Berks and Lehigh Counties, Pennsylvania. This non-local jasper occurs with greater frequence in the series of finished tools than it does in chippage and rejectage, and represents a continuation of the pattern of flint dispersal seen at the Shoop Site, with more northerly stones predominant among non-local flints. The Williamson Site also has conspicuous later components, readily separable from the fluted point complex on the basis of lithic material and typology, and concentrated within one small portion of the whole Williamson Site. Ignoring these later scraps, we find that the Williamson industry is practically identical with that at Shoop's and is therefore ascribed to the Enterline Chert Industry. I prefer to use my name rather than one based on McCary's site because the Shoop sample is larger and includes much less in the way of later material. The Enterline types are those of the Williamson Site; the rougher fluted points, snub-nosed blade end scrapers, many with engraving points, side scrapers, unfinished fluted points (some classified as knives in McCary's report), flake knives of rougher lamellar form rather than the Hopewell and Denbigh type, and rare gravers based on flakes. The proportions between tool types at the Williamson Site are practically the same as at the Shoop Site. The conspicuous difference is the large amount of chippage and workshop debris at the Williamson Site where nearby chert sources were utilized, and the rarity of such debris at the Shoop Site. Even though the people at Williamson's had found and were exploiting a local chert source, the high frequency of Pennsylvania jasper indicates, to me, their recent arrival in eastern Virginia. The absence of more expert fluted points, of spokeshaves, of a spall industry, of bifaced gravers, and of narrow fluted knives, contrasts with the Parrish Industry, and fits exactly with the Enterline Industry, another strong argument for placing this important Virginia site very early rather than later in any series of Paleo-Indian industries.

Another site of the Enterline Chert Industry, and the most recently discovered, is Joffre Coe's site St 4 in North Carolina, at the Fall Line where the Yadkin River enters the Piedmont.[20] This site is on a narrow terrace where the gorge of the Yadkin ends at the mouth of its mountain valley, and is the highest habitable point in this part of

for encouragement and criticism in my study of site relationships.

[19] McCary, Survey and study of Folsom-like points found in Virginia.

[20] I am indebted to Coe for access to his collections from this site and for his explanations, interpretations, and comparisons of the material found at St 4, as well as for information on many other Carolina sites and components which impinge indirectly on the problems discussed here.

the Yadkin drainage. This site was discovered some years ago by H. M. Doerschuk, of Badin, North Carolina, and Coe had showed me Doerschuk's series of fluted points from this site some four years ago. Most of this large series were chipped from the coarse non-flinty silicified rock which outcrops in the mountain slope above the terrace at this site, and these points were the roughest and most atypical fluted points which either of us had seen up to that time. The series also included a fair proportion of points which were probably rejected before they were quite finished. At this time both Coe and I were much puzzled by the site, and could come to no conclusions as to its significance. It now appears that the use of this poorer local stone and attendant crudities in the finished product were the cause of our confusion.

In the meantime Coe has begun extensive excavations in this and other sites on the Fall Line in the Yadkin Valley, and the results even of preliminary work done up to the present time are rich in sequence data and in implications for the Archaic chronology of the whole Eastern Woodlands. A deep stratified site on the terrace across the river and opposite St 4 includes at least nine distinct industries arranged in physically stratified soil zones in an eight foot profile, but the lowest levels were apparently not early enough to include anything of the fluted point period, although extremely early horizons are indicated.[21] Artifact types which are distinctive of the deepest levels of this site are present as major components at St 4, but later complexes are so far not represented in the St 4 sample. St 4 consists of the Enterline Chert Industry mixed up with these other very early industries in a cultural deposit more than two feet thick, and in the preliminary excavation these industries were not separable in terms of stratigraphy or superposition, although readily so on the basis of typology.

My understanding of St 4 is based upon an examination of the collection derived from a very limited preliminary excavation by Coe, representing only four five-foot squares. While I have had the benefit of all of Coe's knowledge and suspicions about this and related sites, he is not to be held responsible for my conclusions, which are advanced with some hesitation because of the small amount of digging done here so far and because the site is so promising of important results in the future. Considering the volume of soil involved, the bulk of the stone material excavated, and especially of chippage and debris, is amazingly large. In some levels the bulk of chippage was greater that that of the soil mixed with it. All of the Enterline tool types are represented by good examples both in the local stone and in non-local flints, and the other artifacts are those of the early industries, without fluted points, which are known from deep levels of the other Fall Line site. Spokeshaves and other tools of the Parrish Industry are so far missing. The huge amounts of chippage and spalls seem to be in part a result of difficulty which these Paleo-Indian peoples had in chipping a non-flint stone to their standards. The Enterline tools are present in large numbers, however, and more than half of them are of this local stone. Gravers based on flakes, precisely like those of the Shoop and Williamson Sites, are conspicuous here, both because the sample is large and because these very delicate tools were excavated from undisturbed contexts and have not been mutilated by farming tools and other surface agents. This site is the only one to have produced an adequate graver series, largely because of better preservation; at the Shoop Site many possible gravers have been omitted from study because of recent damage to the thin flake edge on which they were based. These gravers are also in both the local stone and in non-local flints and cherts.

The non-local flints at St 4 include some specimens of the chert which predominates at the Williamson Site, and some other flints and cherts which are unfamiliar to me. We do not know as yet whether flint incidences at this site conform to the north-south displacement noted for the Shoop Site and the Williamson Site, but the notable presence of the Williamson chert suggests this. Here I should like to point out certain details of this flint displacement pattern. It is most conspicuous at Shoop's, the northernmost site, less so at Williamson's, and, by my inadequate examination of the St 4 collections, least so here, but still significant. This suggests a less rapid dispersal of the people who carried this industry as they moved further south, and less rapid migration into new regions with undepleted game resources. One important consideration is the presence in minute quantities of unidentified flints and cherts at each of the three sites; not only are the sources of these stones unknown, but they are materials which are not found on Indian sites in the same or nearby areas. I believe that my overall fa-

[21] William Haag, editor, *Newsletter*, Southeastern Arch. Confer. 3 (1): 4, 1951.

miliarity with the flints used in the Eastern Woodlands and Ohio Valley area from the Canadian border south to Georgia is fairly adequate, and probably as good as that of anyone else for the total region, yet each of these three sites includes distinctive materials, in tiny quantities, which I had never seen before anywhere. These stones are not the nondescript materials which are so frequent in Indian sites, and they have peculiar physical characteristics which indicate they are not unusual phases of some of our local stones. At the Shoop Site the only examples of such minority stones so far identified are from the Hudson Valley. It seems very likely that these unidentified materials are stones carried much further than any of the identified materials, and, if this is the case, such flints might be very important clues to the still earlier history of the Enterline Chert Industry. I hope that this idea may be tested in the future with more data on lithic materials and flint sources. I suspect that knowledge of Canadian materials is necessary to this problem.

The most recently discovered fluted point site in the East is the Quad Site in central Alabama, as reported to me in a letter from Frank J. Soday of April 11, 1952. The site, located on a much-eroded ridge, includes an Archaic component and at least one Paleo-Indian component, and has produced several hundred artifacts in the first few weeks of surface hunting. The tools at this site include the total inventory of both the Enterline Chert Industry and the Parrish Industry, with fluted points of the Enterline type, the Clovis type, and the southeastern form with expanded ear-like corners. The Enterline scraper types are present in some number, and include the snub-nosed end scrapers with thick graving spurs. Gravers and lamellar flake knives of the Enterline forms are present, as well as spokeshaves, bipoint gravers, drills, spall-scrapers, biface knives, and combination cutting-scraping tools of the specialized Parrish forms. This assemblage is almost entirely of a blue-grey chert, a different material from that used by the Archaic occupants of the same site. A number of the fluted points and other tools of the earlier complex were, however, rechipped and used by these later Archaic people, and one of them has been made into a stemmed point. Significantly, the Archaic component here is a very distinct complex from that at the Parrish Site, and thus comparison of the collections from these two sites should answer many questions about the allocation of Parrish types to a fluted point industry. The Archaic material at the Quad Site consists mostly of broad side-notched and lanceolate points, some of which Soday compares to Krieger's Plainview Point, a type of major significance to Paleo-Indian problems on the Plains. These Archaic forms differ in lithic material and degree of patination from the objects of the Enterline and Parrish components at this site, but show a very high proportion of basal thinning and basal grinding. Smooth-base Archaic points of these shapes are found almost throughout the total Eastern Woodlands, and, although they have usually been considered Archaic minority forms at a Laurentian time level, I suspect that they represent separable complexes which were relatively early in the Archaic Epoch. They may have some direct connection with the fluted point industries, as descendants retaining some of the older flint-working traits.

The projectile points and scrapers of the Enterline Chert Industry as seen at these four sites are quite distinct from any known complex from nearby areas, and I can show no relationship between these tools and forms in any Indian culture of the region. In terms of our present knowledge, the Enterline Chert Industry is our first example of the earliest postulated culture of this area, earlier than the use of ground and polished stone tools.[22]

[22] It will be noted that in this paper I discuss the fluted point complexes, Folsom, Clovis, Denbigh, Alaskan Fluted, Enterline, and Parrish, as the earliest cultural remains in North America and as the imperishable remains of our first human inhabitants. I do not wish to imply that fluted point complexes were necessarily the only cultures in the Americas during the Paleo-Indian Period, or that cultures stressing very different tool types may not be as old on this continent. The problems of chopper-complexes at an equally early period in the Delaware Valley and in other areas are not closed, although we do not have any actual evidence of equal age for any of them. The George Lake Complex excavated by Emerson Greenman in Ontario is a quite different chopper culture which, despite the puzzles it raises, is very probably of equal antiquity. My evaluation of this complex is not based on the published material, which is not too conclusive, but on examination of the collections and discussion with Greenman. Preliminary discussions of this problem are as follows: E. F. Greenman and George M. Stanley, A geologically dated camp Site, Georgian Bay, Ontario, *Amer. Antiquity* **5**: 194–199 1940; Greenman and Stanley, The archeology and geology of two early sites near Killarney, Ontario, *Papers Mich. Acad. Sci.* **28**:505–530, 1942; Greenman and Stanley, Two Post-Nipissing sites near Killarney, Ontario, *Amer. Antiquity.* **6**: 305–313, 1941; Greenman, An early industry on a raised beach near Killarney, Ontario, *Amer. Antiquity* **8**: 260–265, 1943; Greenman, Material

Therefore one important approach is comparison of this fluted point complex with Paleo-Indian industries in other parts of North America. Actually there are few examples of such early complexes which are well-enough known for valid comparison and contrast. The projectile point form which is most closely related to ours is the Clovis fluted point, while the Folsom point is a somewhat distinct and more specialized product.[23] Our industry shows certain relationships and contrasts to the Clovis and Lindenmeier (Folsom) complexes, as well as to the early Alaska Denbigh Flint Complex, which are worth some analysis.

The last is the first excavated example of an early Alaskan industry, worked out by J. L. Giddings at the Iyatayet and other sites on Cape Denbigh, Alaska.[24] The lowest level of this site,

culture and the organism, *Amer. Anthrop. N. S.* **47**: 211–231, 1945.

Greenman's sample is adequate for characterization of his industry and the geology is convincing, even though the George Lake Industry is known only from a limited geographic area. The archeologist will think in this connection of many other claims, old and recent, for equal and higher antiquity for human cultural material in the New World, but in no other cases am I satisfied that a case has been made, either because of questionable geologic or faunal dating, because of the problem of improper collection of data, or because the samples from certain contexts are so small that they are not diagnostic of anything and might pertain to a fluted point complex as well as any other. The case for the age of the fluted point complexes, apart from recent collaborative data from radioactive carbon studies, does not depend on any single site or area, but depends on a great body of consistent evidence from several regions. This is not true of any other claims for a similarly high antiquity, even Greenman's, certain as that may seem. This does not necessarily mean that diverse cultures which were equally old will not be found, although there cannot be too many of them; it does suggest that human occupation of the North American continent much before the fluted point complexes is somewhat unlikely. It is in this sense that I consider the Shoop Site to represent our earliest level of human occupation in the Northeast.

This is in marked opposition to a recent report by George F. Carter, who considers this view scholastic and Procrustean (George F. Carter, Man in America: A criticism of scientific thought, *Scientific Monthly* **73**: 297–307, 1951). Carter is convinced of the presence of Lower Paleolithic cultures in North America during Wisconsin and pre-Wisconsin times, as a conspicuous part of the American culture sequence. I suppose there is some possibility that this might have been so, but we lack any evidence of such industries in Pleistocene geological contexts. Carter's thesis involves allegations of such occurrences in terrace gravels and old geological deposits, without published documentation, and includes ideas on such patination phenomena as "desert varnish," sandblasting, rinding, and on the formation of desert pavements; his analysis, to me, is confused and based on inadequate physiographic models. As a field archeologist involved in an area where related problems became classic, the Delaware and Susquehanna Valleys, Carter's arguments convince me that we need more of the data of the geologist and soil expert and more criticism of their procedures as generally utilized in archeological literature, rather than that we still retain an older American prejudice against antiquity. Such earlier cultures are still an open question.

[23] Edgar B. Howard, Evidence of early man in North America, *Mus. Jour.* **24**: 61–175, 1935.

Alex Krieger, who knows the Clovis material much better than I do, suggests, on the basis of the few side-scrapers and other tools known for the Clovis Industry, that this may also represent an extremely homogeneous and restricted industry, perhaps even more so than the Enterline Complex. Until the Western Plains heavy fluted point sites are better studied and until they are better known from campsites rather than from material left at the sites of gamekills, I must forego comparison of the Clovis and Enterline Industries, even though I suspect such a comparative study would be the most valuable to our knowledge of the Enterline Industry. Krieger is impressed with the parallels between the total series of eastern fluted points and the whole series of points of Clovis type on the Plains, and suggests that the total eastern series including the Shoop specimens should be compared to the whole range of the Clovis type. I am impressed by differences between varieties of eastern fluted points, whereas Krieger would question the validity of assigning them to more than one type. I would agree with Krieger in assigning the majority of the stray northeastern fluted examples to the Clovis type, without reservation, but would exempt the majority of the Enterline forms from this class, and also would not include the pentagonal fluted points of the Reagen Site or the "fish tail" forms of the Southeast in the Clovis type. The difference of opinion is very likely a factor of my poorer knowledge of the Clovis material. Nevertheless, the long, thick, heavy, eastern points with acute tips, slight channeling or very concave long flutes formed by a single channel flake, and almost straight tang edges are to my eye the same thing as the western Clovis points I have handled, and are distinct from the Enterline points, from the Ohioan type with the outturned ears and slight channeling, and from the strongly pentagonal forms. Only a very broad comparative study of both eastern and western forms will permit division of these fluted point varieties into entirely satisfactory types. My present knowledge of the Clovis material, based almost entirely on Edgar B. Howard's series from the Clovis Site in the collections of the University Museum, Philadelphia, is not adequate for such a comparison.

[24] J. L. Giddings, The Denbigh flint complex, *Amer. Antiquity* **16**: 193–203, 1951. I am indebted to Dr. Giddings and to Dr. James VanStone for access to their material and for information and rewarding discussion of this extremely important complex. Ralph Solecki, of the River Basins Survey, has also made available to me his data on an almost identical industry, the Uni-

underlying extremely early Eskimo material, is a Paleo-Indian industry lying in an old erosional surface, warped by frost and apparently of late Pleistocene age, unconformably overlaid by sterile sand. The gravels and artifactal material on this old land surface seem to be residual material, dropped from soil and occupational zones destroyed when the old erosional surface was formed. The industry at the lower level is an exceptionally sophisticated one, employing the most delicate flaking and the prettiest small tools imaginable, and has a generally Mesolithic appearance. Ground stone tools are missing, and the majority of artifact types are small, narrow trianguloid projectile points, side blades, tiny burins, and lamellar flake knives. These parallel-flaked, small tools, of obsidian and chert, are not like any of our local artifact types, but another tool series in the same level suggests the Shoop Site. Two larger trianguloid points of bolder flaking are roughly the size and shape of northeastern fluted points, and one of them has broadly channeled faces. They are rough and irregular compared to our series but suggest the same technique. A small series of end scrapers are precisely like the end scrapers of the Enterline Chert Industry, and, but for lithic material, are indistinguishable from the Enterline end scrapers; in fact, they are the only scrapers I have seen which so closely resemble those in our industry. Another scraper series in the Denbigh Flint Complex is a blade side scraper series very much like the Enterline series, except that some of the Alaskan specimens are more extensively retouched than the Pennsylvania examples, and resemble extreme specimens from the Lindenmeier Site. Lamellar flake knives, struck from polyhedral cores, are conspicuous in the Denbigh Industry. Comparison with the Enterline Chert Industry is difficult, because we have too few well-preserved examples here, but the Denbigh flakes and cores are almost, if not entirely, identical with Ohio and Illinois Hopewell types, and the Shoop Site flake knives are not so expertly executed. Altogether, the Enterline Chert Industry bears startling resemblance to a part of the Denbigh Flint Complex, and is totally unlike the remainder of this early Alaskan assemblage.

The Lindenmeier Site in Colorado was selected for comparison of classic Folsom material with our complex because the excavated sample from this site is so large and because this is the most adequately studied Paleo-Indian site. The following statements of resemblances and contrasts are based upon Dr. Frank H. Roberts' publications and upon study of his total sample from the site, which he very graciously made available to me in January, 1951.[25] Much of the following is also based on discussions with him. Description of the Lindenmeier series is much simplified in the following brief comparison.

The Lindenmeier Site has produced a large series of end scrapers, based on thick flakes, which in general style are like the predominant tool at the Shoop Site. The Lindenmeier series is much more variable in size, outline, and degree of retouch, however, and only a part of its range coincides with the Shoop series. Some few of the Colorado scrapers are identical blades, except for lithic material, and the Enterline series seems to correspond to a part of the Lindenmeier series, with many larger, thinner, more ovate, and more irregular forms at Lindenmeier. While such blades are present at Lindenmeier, they are not nearly so predominant in Roberts' series as at Shoop's, and do not form so restricted a type. As with the Denbigh Flint Complex, the major tool type in our series has its closest resemblance to a less predominant form, and the identity of form noted with the Denbigh scrapers holds with only a few specimens in Roberts' series. On the High Plains, scrapers of similar types persist as a major tool type until quite recent times, but in Pennsylvania distinctly different scraper forms are found in Archaic and Woodland complexes. Compared to the Enterline Chert Industry, the Lindenmeier series is very weakly a blade industry.

Side scrapers are conspicuous at Lindenmeier, and show greater variability than the Enterline series. Many are based on thin flakes, while others are retouched to the extreme (as are some Denbigh examples), and are curved and thicker than they are broad. Few of these show the bulbs of percussion at a working tip, as do so many from the Shoop farm. However, a mid-part of the Lindenmeier series looks very like the Shoop series and typical Denbigh examples, but the Shoop collection is more homogeneous than the Lindenmeier series. Flake knives (thin prismatic flakes

versity of Alaska Campus Complex (Ralph Solecki, How man came to North America, *Scientific American* **184**: 11–15, 1951).

[25] Frank H. H. Roberts, Jr., A Folsom Complex: Preliminary report on investigations at the Lindenmeier Site in Northern Colorado, *Smith. Misc. Coll.* **94** (4), 1935; Additional information on the Folsom complex, *Smith. Misc. Coll.* **95** (10), 1936.

or "blades") are present at Lindenmeier, and channel flakes were used as flake knives, but flake knives are not so conspicuous as in the Denbigh Flint Complex, and are more abundant than at Shoop's.

Utilized flakes of several forms are also conspicuous at Lindenmeier, and chippage was much more abundant, probably because local stone sources were used. Several important Lindenmeier artifact types are missing at Shoop's however; the concave-edged scraper, or spokeshave, the fluted knife with thick tip, the biface graver, spall knife, and grinding slabs. The two sites resemble one another in that both lack massive tools of all types, such as choppers, large blades, hatchet forms, and large knives and scrapers.

The projectile point series ascribed to the Lindenmeier complex consists entirely of fluted points, all or almost all of which show basal smoothing. However, in the very large series examined, there is not a single point which shows detailed resemblance to a point from Shoop's. The majority are shorter, smaller, and thinner than our specimens, with a parabolic outline which is "blunter"; the parabola is lower and broader, so that they are more rounded at the tip. Concavity of edge near the corner is not characteristic, and the smoothed sides are generally straight edged. The concavity of the base is less variable, and more nearly an arc on the average specimen. A longer variant at Lindenmeier is more acutely pointed and less parabolic than Shoop examples, and differs from them in many other details. These longer forms do not look like eastern fluted points.

Even more striking differences are noted in the stone working techniques. Channel flaking is much more regular, with a single channel flake drawn from the basal nipple as a more effective thinning technique. Unfinished points, broken by a hinge fracture at the end of the channel flake, are frequent. Points were apparently based on thinner and almost completely refined blanks, chipped from sheet-like fragments of jasper nodules rather than thick spalls, and fluting was almost the last step in shaping the points. Chipping is much more delicate, more parallel, and narrower than in the Enterline Chert Industry, and appears to be the result of both sequential and alternate pressure techniques, suggesting that practiced in the Kimberly Range of northern Australia, in recent years. Basal and tang smoothing is almost always present, but is not usually as strongly developed as on our examples.

The Parrish Site in Kentucky, according to William S. Webb's description of the excavated material, presents a more difficult problem for comparison, and the collections from this site should be subjected to reanalysis at some time in the future when our knowledge of Paleo-Indian technology is more adequate.[26] The Parrish Site included a minor fluted point component, a strong Late Archaic complex of Indian Knoll type, and apparently at least one other Archaic component of new type marked by choppers, which may not be well represented or important, but which has not been segregated from the other industries. Archaic and "Early Hunter" complexes were not separable by excavation data, but were segregated in the laboratory by typology. The "Early Hunter" complex is made up of tool types which are not ordinarily found in the Kentucky Archaic; the Paleo-Indian material is the residue left by the subtraction of Indian Knoll artifact types from the total collection. Webb has apparently used the criteria of crudeness as one basis for separation, with rougher tools concentrated in the early complex and more skillfully flaked pieces ascribed to Late Archaic. In terms of other Paleo-Indian complexes, this may be an extremely misleading form of analysis, and may be a partial cause for some of the major differences between the Enterline Chert Industry and Webb's Early Hunter description. Major distinctions cannot be resolved by any charge of error in Webb's analysis, however. It is apparent that the Parrish Site represents a quite different and quite aberrant industry, unless the bulk of the Paleo-Indian objects have in fact been ascribed to his Archaic component. I think this is extremely unlikely.

Webb has classified the artifacts of his Early Hunter Complex as fourteen tool types, which include several forms of utilized flakes. Seven are apparently tool types not represented at all in the Shoop Site collections. The other seven types include apparently some forms included in my type characterizations, but his types are anything but equivalent to those presented here. The majority of his end scrapers seem to be round-edged forms, often of elliptical outline, based on thin spalls of random form. Rare side scrapers of the forms found at Shoop's are apparently included in three of his types. Judging by the report, end scrapers of our types are not present in the Parrish collections, although forms like some of the crudest of the Shoop specimens are illustrated. Flake knives

[26] Webb, The Parrish Site.

described in the report include some thick blades of lamellar form, and thin prismatic flake tools of the Enterline type are not described. Two types of gravers or perforators differ markedly from our poor examples, and are almost certainly part of a quite distinct fluted point complex. Concave-edged scrapers are present in some number, and again suggest temporal differentiation of fluted point industries. Fluted points are represented by only seven examples, while the sample of other tools is as large as the Shoop sample; this suggests to me that the other tool types include a bulk of specimens from other complexes. Four non-fluted points of very different technology are also ascribed to the Early Hunter Complex, again suggesting that this component is actually an artificial composite. Blanks like the unfinished points at Shoop's are included in Webb's "Chopper or Crude Knife" type, and I suspect the rest of the type is made up of slightly worked and rejected flint nodules and of Archaic cleavers not of Indian Knoll type.

The industry from the Parrish Site includes a few blades like the Enterline Chert Industry, but also has large series which pertain to some other industry. My statements of these differences, based only on the published account, may be quite misleading. However, if we put aside the question of the proper separation of the Parrish Site material and rely fully on the published material, certain basic differences are evident. Typical High Plains Folsom and later types, such as the concave-edged scraper ("spokeshave") and the graver chipped from both faces, are present at Parrish in quantity but absent in the Enterline Chert Industry. The Enterline Industry is predominantly a lamellar blade industry, and in this it differs from all later complexes of our area; the Parrish Industry is predominantly not a blade industry, and much of it looks like conventional Archaic material of the Northeast, although not of Kentucky. Parrish relationships to Lindenmeier seem strongest where the Enterline resemblances are weakest. The Enterline Chert Industry is more markedly a blade industry than is Lindenmeier, and the Parrish series is very weakly so. The most poorly made fluted points of all are in the Enterline Chert Industry, while the few Parrish Site examples are of better execution, but not like the very delicate Lindenmeier points. The Parrish Industry looks like the Wilhelm Site and the Reagen Site rather than the Shoop Site. These ideas suggest a thesis in chronology; which should be advanced only as a rather tenuous hypothesis: the Enterline Industry (Shoop Site, Williamson Site, St 4), with the poorer points and the emphasis on blade elaboration, with little of the graver and complex-shaped scraper-knife series, and with a hint of burin technique (?), may be the oldest of the series, and nearer to a postulated Asiatic prototype; the Parrish Industry (Parrish Site, Wilhelm Site, Reagen Site), with better points, less of the heavy blade making and more simple spalling, and with gravers, spokeshaves, and round-nosed scrapers, is a later variant, comparable to the stray finely-made fluted points, thin biface knives, and concave scrapers not found on the Shoop Site. Close resemblances between the Enterline Chert Industry and the Alaskan Denbigh Flint Complex, as well as the close resemblance of the few Alaskan fluted points to our local types,[27] would suggest that the Enterline industry is closer in time to Asiatic ancestors than any other known fluted point complex. In the West, extension of these ideas on trends would make Folsom and Lindenmeier a late and locally specialized fluted point complex, with the Clovis fluted point an earlier form closer to the common ancestor of various fluted point complexes. None of the Shoop Site fluted points can be ascribed to the Clovis or Folsom types, but putting aside any idea of close resemblances and thinking of the two areas in terms of trends, I think we can set up an equation for the fluted point types as follows—Enterline: Parrish = Clovis: Folsom. These theses are at the present time not testable by excavation, and are suggested here as hypotheses based only on technological analysis of the complexes involved, not on any geological or faunal evidence, and are not to be considered seriously

[27] Ralph Solecki, How man came to North America, *Sci. Amer.* **184**: 11–15, 1951, p. 14. Includes a plate of a point remarkably like Eastern Woodlands examples, with the triple channel flake pattern and many other details described for the Shoop points. This specimen is very unlike the Clovis and Lindenmeier types, but very like our examples except that it is better fluted.

Ralph Solecki, Notes on two archeological discoveries in northern Alaska, 1950, *Amer. Antiquity* **17**: 55–57, 1951. Describes, among other artifacts, three Alaskan Fluted points (p. 56, fig. 36, *c*, *d*, *t*). These points also closely resemble eastern forms, and one of them, the same specimen as above, has the triple channel flake pattern and closely resembles the Enterline Industry points in other details. On the other hand, these Alaskan examples seem quite distinct from any High Plains specimens I have examined, of the Plainview, Clovis, or Folsom types.

until we know something of many other fluted point sites in many areas.

Such comparisons between complexes of widely separated areas, however preliminary they may be at the present time, suggest that we are dealing with strongly distinct regional variants of one major culture type, more closely related to one another than to any known Archaic or later cultures of their own areas. It seems unlikely that we can derive one of these three series (Alaskan, High Plains, Eastern) from another; they appear rather as diverging traditions, each specializing somewhat in a different direction from whatever basic tool complex was originally introduced into the American continent. The Enterline Chert Industry is the most restricted and homogeneous industry of these, and appears to have represented the most conservative tradition. In terms of our present sample, it is a remarkably stereotyped and impoverished industry.

The Enterline industry is the first discovery of an assemblage which may represent the earliest human occupation of Pennsylvania. Fluted points can now be considered as distinctive of specific industries in the area, rather than as stray problems. Typological relationships with cultures of known antiquity in other areas strongly support the thesis of priority of this complex over other Pennsylvania industries. The weathering stage of the flints, the absence of ground stone tools, and the elemental nature of the tool inventory also indicate that the Shoop Site represents the occupation of very early hunters of large game animals. At this time such areas of rugged physiography as the North Mountain section may not have been heavily wooded, and much of central Pennsylvania may have been prairie. Such a difference in biota would help explain the location of the Enterline industry sites on high ground.

As an early industry of the area, the direction of derivation of the Shoop assemblage is an important question. Series of stray fluted points from the area indicate that Paleo-Indian people in this area preferred Pennsylvania jasper as a lithic material, and often carried specimens of it into New York, New Jersey, Delaware, and Maryland. Onondaga chert was a favored material in the upper Allegheny and was used extensively in western New York and northeastern Ohio. The Shoop Site has produced very little jasper, and practically every specimen there is Onondaga chert. The Ohio cherts, used so extensively for fluted points in western Ohio, are totally unknown as fluted points found in Pennsylvania. The Shoop Site looks like an intrusion from western New York or Ontario, and the sparsity of jasper here would suggest that this intrusion was earlier than major use of Pennsylvania jasper. A similar shift of materials from North to South may be defined on sites in Virginia and North Carolina, without as strong a reflux on other sites; this flint distribution is partial documentation of a migration. Pennsylvania jasper at the Williamson Site is consistent with this displacement pattern. Pennsylvania jasper fluted points are well known from Maryland and Virginia, and there is a suspiciously high proportion of them at this Virginia Paleo-Indian site. In New York a fair number of fluted points are made from nonlocal cherts. Many of the sources are not known, but some apparently did not originate to the south. If these stones can be traced to Canadian sources and a strong distribution of them documented in New York Paleo-Indian materials and a similar high proportion of Virginia stones found to characterize more southerly fluted points, such as those at St 4, the cherts of the Shoop Site would fall into a very large geographic pattern. Without this, the Shoop Site appears to represent a migrant industry from western New York, prior to the use of local lithic materials, and the Williamson Site a new arrival at a flint outcrop. These sites look like the first local stations in the advance of our earliest peoples from the north into the unoccupied Eastern Woodlands.

Whoever they were, the people who camped at the Shoop Site were the carriers of a blade industry which is best illustrated by scraper forms; in America, their blade technique was extended to the basal thinning of projectile points. The Enterline Chert Industry is a local variant of the earliest well-documented human occupancy of North America. In a world-wide picture, it is the easternmost extension of a widespread and varied, yet somehow distinctive, blade tradition in flint technology which was distributed, in Upper Paleolithic and later times, from the Atlantic shores of Europe to the Pacific in northern Asia, with a southern extension into North Africa and the Near East and an eastern extension into Alaska and the High Plains. The origin and history of blade industries are far from well-known, but such North American complexes as the Enterline Chert Industry at the Shoop Site and related sites are relevant to problems which are nearly world-wide. The way of life and the technology

of the Shoop Site were probably not too different from that of the Upper Paleolithic of the Old World. Formally, the Paleo-Indian industries are not Neolithic; a statement which does not mean very much. Stated another way, none of the traits which are considered characteristic "Neolithic" are present in these sites, and in many respects our earliest cultures contrast almost as greatly with later Indian complexes as they do with an old-style "agriculture-pottery-ground stone tool" type of definition for Neolithic. Neither, in Old World diagnostics, were Paleo-Indian cultures "Mesolithic." There is little in later local cultures which we can by any fashion derive from the Enterline Chert Industry.

The people at the Shoop Site were apparently newcomers who did not yet use the flint of the country-side, but who used the stone of their previous abodes. Almost every sharp-edged chip and flint scrap was used as a tool; they had not yet learned to use the local flints, and they were, moreover, stingy with the flint they did have. They left remarkably little evidence of their habitation in Pennsylvania, as also in New York and other areas. They were probably the first thin vanguard in the settlement of the Northeast, highly mobile nomadic hunters of large game, contemporary with extinct mammals of the closing Pleistocene. They may not have been many generations away from Bering Strait. The prominence of blade techniques in their flint work, the absence of any "microlithic" industry, the homogeneity of their tool types, and the few contrasts which we can point out with other eastern objects of this period, as well as the relatively crude execution of their projectile points, indicate that the Shoop Site occupation was early in the American Paleo-Indian period, and is at least ten thousand years old.

## NOTES ON THE SPECIMEN DRAWINGS

The drawings of specimens from the Shoop Site were prepared instead of photographs because of difficulties of making photographs adequate for illustrations. This is partly a consequence of the weathering of the specimens, and partly due to the nature of the material and of the chipping. The flaking on these tools shows very little relief, and most of the specimens show rounded contours with irregularities which do not reflect the flaking pattern. Weathering has further blurred the flake-scar edges, and the spongy eroded surfaces of the tools photograph as a diffuse surface with inconspicuous chip scars but with very strong mottling due to the variable structure of the stone. The flaking patterns are of very low contrast, but the mottling and texture variations of the chert are of very high contrast.

Two substitute procedures led to better photographs, but owing to the low relief of the surfaces these were still not satisfactory. The best pictures were made of opaque plastic casts which were made from latex molds of the specimens. These still did not show sufficient detail. Less satisfactory were pictures made of coated specimens, on which a thin layer of ammonium chloride had been condensed from vapor. Painting and dusting the surfaces with China White and other opaques is even less manageable. Owing to the low relief and weathering of the chert surfaces, boundaries of many of the chip scars can only be located by turning the specimens in the light and feeling for the contour-breaks with the fingertip and nail.

The drawings which I prepared are interpretations, as indeed are any illustrations, and are essentially flat projections of the chipping patterns of the specimens. More expert drawings could have been prepared by a more skilled draftsman; however, the necessity of showing the actual surface patterns, rather than an artist's interpretation of them, meant that I had to do them myself. Because of technical inadequacies, and in the interests of simplicity, I have not attempted to show relief by the conventions of shading, and I have ignored the convention of light directed from the upper left of a drawing. While these drawings lack much in finish and skill of execution, they are precise and painstaking reproductions of the shape, contour, and chipping detail of the specimens, and the boundaries of each chip scar, as drawn, are not a matter of opinion or estimate. Shading lines within each chip scar are concentric to the percussion point of that chip scar, and so indicate the direction from which the chip was drawn. To some extent, they also suggest the contour and shift in contour and direction of the flake scar. Hinge-fracture, where important, is indicated by hatchuring. Recently-broken and fire-damaged areas are not reconstructed in the drawings, but are indicated by irregular shading, as are edges found by old nodule surfaces in a few cases. These examples are mentioned separately in following notes.

The drawings were made from the actual specimens supplemented by projections from film transparencies. The transparencies, on Ansco Color Film, were projected to scale on the draw-

ing paper from a 300-watt projector with a front-surface mirror mounted at a forty-five degree angle in front of the lens; this permitted keeping the projector in a horizontal position, so that it did not over-heat, while the image was projected onto a horizontal sheet of paper. Slightly improved definition of the projected image is possible with a good condenser type of enlarger, but the light level is so much less that the image is not nearly so usable. A reliable drawing cannot be made from such a projected image without constant reference to the actual specimen, and actually the projected image is only useful for accurate scaling, proportioning, control of the direction of view, and locating numerous landmarks on the drawing. An opaque projector or a camera lucida, used for the same purpose, is of very little use because it removes the actual specimen from easy reference, and because the light intensity is much lower. The usefulness of the transparencies depends largely on the quality of the original photography, and, with black and white transparencies, an original negative gives better results than a positive film-strip. A competent artist would probably have little use for such "crutches," but his interpretation of such unfamiliar details as chipping-scar patterns would reflect his stylistic training, and give an impressionistic substitute for objective reproduction of the patterns I wish to show. However rough the accompanying drawings are, they represent my interpretation of the tool types involved rather than an attempt at photographic appearance by the artist's stippling and shading effects. These generally reproduce the overall appearance of a specimen but misinterpret most of the details.

In making the drawings, the projector was mounted on an elevator tripod so that it could be easily raised and lowered and made level. The image was projected to scale and leveled, and the image used to sketch in the outlines and major flake scars of the specimen. Landmarks in the projected image were generally supplied best by the mottling pattern of the stone, since colored areas of the stone could be readily correlated with the chip scar and contour details of the specimen. Each detail had to be checked against the specimen in hand. The final drawing was generally made without reference to the projection, since only the specimen in strong light could be used as a base for the final illustration. In some cases, opposite sides of the same specimen do not show quite the same outline in the drawings; this is because the two views of the specimen are not exactly opposite, are not a precise 180 degrees apart. My interpretation of the final pressure retouch on these pieces is not always accurate, since the actual chipping is frequently microscopic and since it is sometimes on an edge so oblique to horizontal that it can only be suggested as it appears from a vertical view. Areas of breakage are not indicated by projecting outlines with a broken line, since I am not attempting reconstruction of damaged specimens. Some of these areas of damage are obvious, while others are mentioned in the following text. Illustrations were selected to show range and variation rather than to illustrate the most abundant or average forms, so that the drawings are skewed in the direction of less typical examples, and, in some cases, of the less expertly made specimens.

# JOHN HECKEWELDER'S INDIANS AND THE FENIMORE COOPER TRADITION

PAUL A. W. WALLACE

Editor, *Pennsylvania History*

THE unsettled controversy over John Heckewelder's reliability as an authority on the North American Indian has occasioned a neglect of his work. That this is unfortunate anyone must realize who stops to consider what opportunities Heckewelder had to study the Indian while his world—the Indian's world—was still pretty much intact, and what an eager, inquiring mind this Moravian missionary brought to the task of reporting what he saw.

Heckewelder (1743–1823) traveled more than twenty-six thousand miles through the American forest during his most active sixty years, 1754–1814, which was a time of the greatest experimentation in the relations between Indians and white men. Those were the years when the Delaware chiefs Papunhank, Netawatwees, Captain White Eyes, Gelelemond ("Killbuck"), and Glickhikan ("Gun Sight") supported the Moravian attempt to save the Indians (body and mind as well as soul) by showing them how to adopt the white man's religion and culture without surrendering their own identity. Those were also the years when Pontiac and later Tecumseh sought to save the Indian race by quite opposite means: the violent expulsion of white men from Indian lands, and a fierce and narrow reliance on their own native customs and traditions.

As early as 1762 Heckewelder traveled west to the Muskingum with Christian Frederick Post in a forlorn attempt to establish a mission center among what turned out to be a strongly nativist group already making preparations to join Pontiac. He was personally acquainted with Shingas (known for good cause in the Conococheague Valley as "the Terrible"), and he attended the funeral of this war-chief's wife. Captain Pipe—who was to take him prisoner, nineteen years later, and bring him with his flock from the Muskingum, where a second attempt to found a mission had been more successful, to Upper Sandusky—paced off for Heckewelder and Post the small plot of land assigned to them by the Indian council for a garden. "King" Beaver befriended him and, by timely hints, got him safely out of the region before Pontiac's blow fell.

From that time on Heckewelder was associated, in one way or another, with all parties in the great Indian experiment: those who wished to "modernize" the Indian, those who wished to anchor him in the past, and those who wished to exterminate him. During the Revolutionary War, Heckewelder, who was himself an American patriot, knew well the Delaware leaders on both sides: Captain White Eyes and Killbuck on the American side, Captain Pipe on that of the British. In 1871, while a prisoner to Captain Pipe's Delawares and the Wyandots, he heard the "scalp yell" or "death halloo" sounded at the capture of his wife and baby daughter, Polly, learning thereby at first hand, and in a hard but reliable school, what exactly the cry betokened. In "Captives Town" at Upper Sandusky, he heard the "alarm yell" sounded, repeatedly in quick succession to indicate the weight of the news, by a runner bringing first word of the massacre of the Christian Indians by Williamson's men at Gnadenhütten. After the Revolution, he traveled much through the woods during the time (both before and after Wayne's victory at Fallen Timbers) when Indians and white men shared the land and mixed freely on the trail and at the inns. He attended Indian treaties at Vincennes and Detroit. Above all, in the mission villages established by the Moravians in the Indian country he lived for long periods with Delawares and Mahicans, working with them in the field and in the "sugar bush" (he had to: the missionaries were without salary), and so getting to know "red-nature" as only those who have worked on a day-by-day level with Indians can know it.

It must be admitted, however, that neither by temperament nor training was Heckewelder a follower of "pure science." Though well educated in his youth at Moravian schools, both in England and Pennsylvania, he was not a college man. By profession he was a missionary teacher, not an anthropologist. At the same time he liked Indians and had many deep friendships among them. He

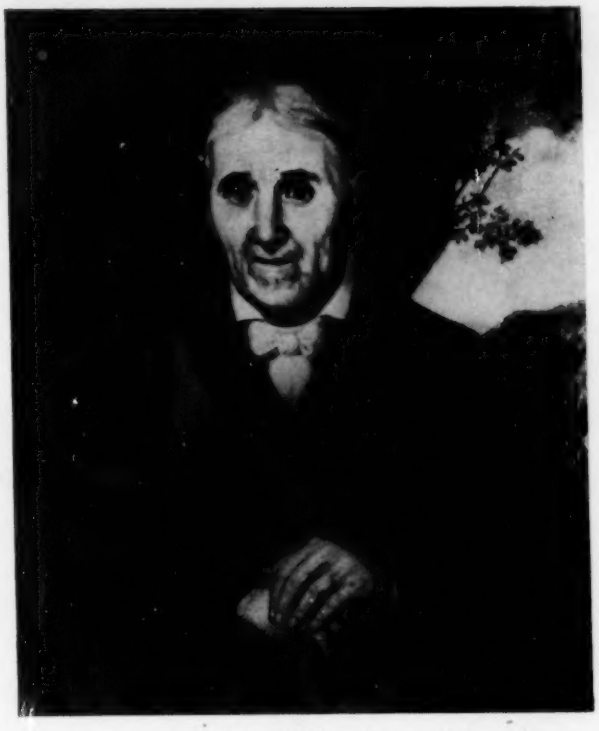

FIG. 1. Portrait of John Heckewelder. Artist unknown.

kept a full diary during part of his sojourn among them and published intimate reminiscences after his retirement. Indeed, the Moravian authorities expected him (as they did all their missionaries) to keep full notes of his field work, whence it comes that the Moravian Archives at Bethlehem, Pennsylvania, are such a superb primary source for anthropologists and historians.

Since John Heckewelder was engaged in what today is called behavioral research, his lack of detachment may not have been altogether a fault. Participation (including emotional involvement) in Indian activities, saved him from the danger of seeing only the statistically-apprehensible elements of Indian society, and losing sight of essential but less obvious moods and motives. At the same time, however, he being a very eager and purposeful participant, his hopes and his hates led him, at least in matters where his sympathies were competitively engaged (for example, the relations between the Delawares and the Iroquois), to take sides so passionately that he became incapable of objective reporting. Undoubtedly it is this personal trait, his emotional surrender to prejudice, which has lowered his reputation among scholars.

This same faculty for taking sides, which has injured him in one quarter, made him prodigiously influential in another. Fenimore Cooper is a Heckewelder product. The sharp-edged contrast, which we find in Cooper's pages, between the noble Delawares and treacherous "Mingoes" (Iroquois), stems from Heckewelder's biased account of the relations between these two peoples. Indeed, if we trace to their source our nation's, and the world's, alternating conceptions of the red Indian as a fiendish savage on the one hand and, on the other, a noble but retarded child who unhappily can never grow up to adapt himself to civilized ways and must therefore vanish from the earth, we shall find them deriving, *through the popular medium of the Leather-Stocking Tales,* largely from John Heckewelder. That such views of the Indian do not come *directly* from Heckewelder, anyone with the slightest understanding of the missionary's career must know. More than that, they are exactly contrary to what be believed. That the mistake should have occurred at all, we must attribute partly to the inventive genius of Cooperstown's most distinguished son, and partly to an error which Heckewelder's extreme partisanship had led him to commit when writing for the American Philosophical Society his *History, Manners, and Customs of the Indian Nations Who Once Inhabited Pennsylvania and the Neighbouring States*—an error which Cooper, who used the book for source material, found much to his own taste and that of the reading public.

Heckewelder's missionary career was among the western Delawares and certain groups of the Mahicans, their "grandchildren." Being a man of warm temperament and quick sympathies, he espoused the cause of Delaware "independence," for which this western branch of the Delawares stood, and accepted without question their explanation of the origin of their quarrel with the Six Nations, who claimed sovereignty over them. Heckewelder was aware at the outset that he was presenting a one-sided view of the dispute. But he so warmed to his work that he devoted the better part of the first hundred pages (about a quarter of the book) to the Delaware case, and wrote with a passion of moral earnestness that left no room for question. Taking from his Delaware informants what was at best a piece of folk-rationalization, at worst a piece of political propaganda, he wove it into a plausible narrative, decorated with such circumstantial detail as to make it seem (in all except documentation, which is non-existent) at first glance historically impregnable. There can be no question that Heckewelder believed what he wrote.

There can be no question, also, that he was mistaken. But that, for the moment, is neither here nor there. Let us examine the rod he fashioned to Cooper's hand for the latter's chastisement of the Mingoes.

In his "Introduction" to the *History . . . of the Indian Nations,* and in the opening chapters, he develops the thesis that the Iroquois or Mingoes (he prefers the latter name, meaning "stealthy," by which the Delawares liked to speak of them) had long been jealous of their more powerful neighbors, the Lenni Lenape, who were called by the English "Delawares"; but, being unable to conquer them in open fight, concerted with the Dutch a piece of treachery by which to bring down this great people who occupied lands coveted by Iroquois and Dutch alike. The Iroquois, accordingly (so runs the narrative) entertained the Delawares with discussion of a matter that appealed to the best minds among them (as it does still to the best minds among us): the danger to the race of continuing warfare, and the means available to an honorable people (though at the price of some loss of sovereignty) of bringing wars to an end. It was cunningly hinted that if one nation (it must needs be a great one, to which no suspicion of weakness could possibly adhere) would take upon itself the role of *woman,* i.e., of mediator, it would bring honor to itself and all mankind in thus "saving the Indian race from utter extirpation."

"Such were the arguments,", writes Heckewelder, "which the artful Mengwe urged to the Lenape to make them fall into the snare which they had prepared for them."

The Lenape consented. At a public treaty in which the Dutch are said to have taken part, the Delawares were installed in the new and honorable international position of peacemakers, the metaphorical insignia of which were a woman's dress reaching down to the feet, a corn-pounder, and a hoe. But no sooner had the Delawares thus been seduced into laying down their arms than the Iroquois ("base and perfidious nation") made it appear that they had reduced the Delawares to the degrading postion of women by conquest in battle.

> The Delawares and Mohicans agree in saying, that from the time of the fatal treaty in which they were persuaded to assimilate themselves to women, and, indeed, ever since the Europeans first came into the country, the conduct of the Iroquois was treacherous and perfidious in the extreme. That it was their constant practice to sally out secretely and commit depredations on the neighbouring nations, with intent to involve them in wars with each other. That they would also commit murders on the frontier settlers, from Virginia to New England, and charge the tribes who were settled in the neighbourhood with the commission of those crimes. That they would then turn negotiators, and effect a peace, always at the expense of the nation whom they had injured. They would sell the lands of other nations to the English and receive the money, pretending to a paramount right to the whole territory, and this, say the Lenape, was their manner of CONQUERING NATIONS!

With this triumphant indictment Heckewelder concludes his first chapter. We do not need to read more to learn whence Cooper derived his travesty on the people of the Iroquois Confederacy.

*The Last of the Mohicans* is full of echoes.

"If it is a true Iroquois," observes Hawk-eye, "I can tell him by his knavish look."

"I have heard," says Heyward in another passage, "that the Delawares have laid aside the hatchet, and are content to be called women."

"Ay, shame on the Hollanders and Iroquois," replies the scout, "who carcumvented them by their deviltries into such a treaty!"

"A Mohawk!" ejaculates Hawk-eye in scorn. "No, give me a Delaware or a Mohican for honesty; and when they will fight, which they won't all do, having suffered their cunning enemies, the Maquas [here used for 'Iroquois'], to make them women—but when they will fight at all, look to a Delaware or a Mohican for a warrior!"

In *The Pioneers* the dying Chingachgook looks forward to the Happy Hunting Grounds, where "no Mingo can ever come."

The aged Leather-Stocking (*alias* Hawk-eye) in *The Prairie,* disgusted with "red-nature" as exhibited by the Sioux (a creature whom, indeed, Cooper paints as little better than a Mingo, who in turn "is little better than a beast"), looks back nostalgically to the friends of his youth: "Ah's me! your Delawares were the red-skins of which America might boast; but few and scattered is that mighty people now!"

Here we must pause for a moment to tackle a question that jumps up inevitably to confront us: What actual foundation was there for the Delaware grievance which Heckewelder presents with such feeling?

Much ink has been splattered in the past over this controversial matter. Wide is the marsh of disagreement, and so narrow the solid ground of generally-accepted fact that a man had better not enter the field of dispute at all unless he be prepared to construct his own thesis, like a causeway, to bear himself up.

This much is common knowledge: In the early years of the eighteenth century, the Delawares acknowledged themselves to be "women" and "tributary" to the Six Nations (Cooper's Iroquois-Mingo-Maqua). At Philadelphia in 1742, Canasatego, speaking for the Six Nations, taunted the Delawares with having been conquered and so "made women of." During the French and Indian War, the Delawares launched a movement for independence. They were, by that time, already circulating the legend (later elaborated by Heckewelder) of a ruse by means of which the Iroquois had led them to accept the role of "woman" or mediator in international society, only to make it appear that this was a humiliation imposed on them by defeat in war.

The present writer is assembling evidence for the thesis that neither Canasatego in 1742 nor the Delawares later were right in their explanation of the origin of the title "women." This is not the place to thresh out the argument. It is enough to say that, in the opinion of the writer, the Delawares, at about the same time that the Five Nations (Iroquois) conquered the Susquehannocks, were themselves conquered by the Iroquois in a cold war—with a little heat turned on in judicious spots; that the Delawares were then or a little later given the status of "women"; and that this title was neither intended nor taken as a humiliation. The term was honorable, indicating a certain stage of adoption into the Iroquois League—an international political system which formerly, and at a time then not too far distant to be remembered, had had the same hopes for humanity as animated the United Nations in 1945.

A perversion of the meaning of the term, probably as a result of the white man's misuse of it in mockery, caused the Iroquois spokesman, Canasatego, and later the Delaware leader, "King" Teedyuscung, to understand it as a term of reproach. Teedyuscung in a fit of passion—and rhetoric—threw his skirt in the faces of the Six Nations and told them to wear it. It might be said that the revolt of the Delawares was less against the position they actually held in the "Great Peace" of the Iroquois than against the white man's blundering misconception of the whole notion. Be that as it may, the question of the Delaware "skirts," with all the new connotations of the word, became central in the struggle that ensued between part—though by no means all—of the Delaware and their "uncles." A considerable body of the Delawares remained under the Six Nations' "Tree of Peace." Their descendants are numerous and influential today on the Six Nations Reserve at Brantford, Ontario. The revolting Delawares lighted an independent council fire in the West. This was the council with which, under a succession of able chiefs including Netawatwees, Captain White Eyes, and Killbuck, the Moravians had such happy relations.

To revert to our earlier question, the Delaware grievance had this foundation: the term "woman" which they bore as a nation in the Iroquois system did not, during the latter part of the eighteenth century, convey to their minds the same meaning it had borne in the days of William Penn.

The subtle processes by which words as well as ways of life change during an era of migrations and the intermingling of alien peoples, were as little suspected by Heckewelder and Fenimore Cooper as they were by the Delawares in Captain White Eyes' circle. To Heckewelder it seemed obvious that there had been an act of deception at some recognizable moment in time—a fraud passed by bad men upon good. And certainly Cooper was not inclined to question Heckewelder. Cooper had found, in a corner of the missionary's work, what must have seemed Aladdin's Lamp to a novelist projecting thrillers: a vision of the American forest peopled by good spirits and bad, a region where reigned an antithetical absolute of good and evil (conveniently personified in Delawares and Mingoes), in an atmosphere altogether congenial to a writer of adventure stories who, if his readers' attention is not to flag, must keep the motivation strong and unmistakable.

For a man of Cooper's proclivities, bent on dishing up for public delectation two already popular estimates of the Indian—the philosophical notion of the noble savage, and the Indian slayer's self-justifying theory that the native had "no more soul than a buffalo," the counteraction suggested by Delaware "courage and high sense of honor" (the words are Heckewelder's) and "the treacherous conduct of the Five Nations," was a godsend. It provided a mold for the Leather-Stocking Series. Cooper liked the antithesis so well that, in *The Prairie,* the scene of which is west of the Mississippi—far distant from any possible Iroquois-Delaware rivalry—he transferred it intact with a simple change of names, rendering "Mingo" *Sioux* and "Delaware" *Pawnee.* In that novel we are entertained with visions of demon-like Sioux warriors haunting the plains, while the noble Pawnee, Hard-Heart, goes about on his

fleet steed rescuing innocence or, ever resourceful, saving himself from his enemies by such devices as, when encompassed by a prairie fire (kindled by wicked Sioux), wrapping himself in a fresh buffalo hide and sitting it out.

It was by such artistic devices as this of Mingo-Delaware contrariety, which he picked up from John Heckewelder, that Fenimore Cooper (aided, of course, by an element of true genius which enabled him to breathe life into his fantastic Indian figures—which, to speak truly, have in themselves as little resemblance to real Indians as the Jinns and Ifrits of *The Arabian Nights* have to American marines) managed to sell his Mingoes to the world as the Indian type. For, be it remembered, Cooper does not fail to let us know (when he has to make up his own mind) that Chingachgook is too good a man to represent his race fairly. In a word, Cooper poured the prejudices of John Heckewelder into the Leather-Stocking mold, and produced the Indian of nineteenth-century convention.

For this travesty we should not, after all, blame John Heckewelder. If Cooper had cared to read Heckewelder more carefully than he did, he would have found the correctives of the missionary's errors. Heckewelder, taking his writings as a whole, was, especially in those things that most interested Cooper, anything but consistent. We must understand this. Heckewelder was not a poet, not an artist who feels the urge to melt all his materials together in the fire of his brain and issue them transformed and blended into a single effect. Instead, he took information as it came, and presented it to the public very much as he received it. A little touching up there may be in places, as in the lengthy conversation reported between Wingemund and Colonel Crawford just before the latter's death by torture. But there is no invention, no exercise even of that fusing process to which Coleridge gave the name of "imagination." The metals are left in the crude state. The edges are rough and hard. Discrepancies stand out and are easily detected.

If Cooper had troubled to study Heckewelder closely, he would have found that Heckewelder's Indians, *individually*, differed little in essentials from white men. A whole people (e.g., the Six Nations) in Heckewelder's eyes, when thought of in general terms and in relation to some contest in which his sympathies were deeply involved, might be so wicked as to appear non-human. Who would expect a dispassionate estimate of England from someone risking his neck in the cause of the American Revolution? For years (indeed, until Captain Pipe stopped him in 1781) Heckewelder acted as an intelligence agent for various American commanders at Pittsburgh. Do not look for academic detachment in his reflections on England's Indian allies. But when it comes to particular Indians, that is a different matter. Even Captain Pipe gets a good word from him now and then, and for certain members of the despised Six Nations he expressed the highest respect.

In fact, whether they are Delawares, Mahicans, or Iroquois, the reactions of particular Indians found in Heckewelder's pages are, almost invariably, much like our own. His Indians succumb, it may be, a little more readily to supersitition—that is, to what we now call superstition. It was fear of witchcraft, he tells us, that caused Shingas's wife, who was ill with a fever, to dismiss her regular Indian physicians (who, Heckewelder assures us, were really skillful and experienced herb doctors) for jugglers who persuaded her someone had her under a spell. Since these men were charlatans, expert only in turning common fears into wealth for themselves, and since they were ignorant of any medical principles, they let their patient die. But, after all, what was there so outlandish about this? Read Kittredge's *Witchcraft in Old and New England*. Even in this enlightened age of ours, I have known cases of attempted (but fatal) "faith healing." I have also known cases of near-fatal fresh-air fads. And there are multitudes among us who still "powwow." Superstition merely changes its dictionary.

Indian men, reported Heckewelder after having seen much of their family life both in and out of the mission, did not make slaves of their wives as Cooper and others have led us to believe. If the men had not allowed their helpmates to attend to the garden and fetch in the fire-wood, we are left wondering (after reading Heckewelder's description of an Indian woman's housework, which consisted mainly in the washing of one pot or kettle), how they would have whiled away their time.

It is true, if the wife went along on a hunting expedition, she carried the pack (a very light one), so that her husband might be free at a moment's notice to follow the chase. When it is remembered that their hunting was not, as with us, a kind of picnic, but that the lives of all the family often depended on it, this division of labor does not seem

unreasonable. Heckewelder tells us he never heard an Indian woman complain of this burden. The men undertook by far the harder part of the labor in support of the family.

To their women during pregnancy, Indian men were kind to the point of indulgence.

> I have known [writes Heckewelder] a man to go forty or fifty miles for a mess of cranberries to satisfy his wife's longing. In the year 1762 I was witness to a remarkable instance of the disposition of Indians to indulge their wives. There was a famine in the land, and a sick Indian woman expressed a great desire for a mess of Indian corn. Her husband having heard that a trader at Lower Sandusky had a little, set off on horseback for that place, one hundred miles distant, and returned with as much corn as filled the crown of his hat, for which he gave his horse in exchange, and came home on foot, bringing his saddle back with him.

Cruelties? Yes, he records them, for instance, Glickhikan's killing of a white prisoner's baby which endangered the war party by its crying. He records also how this incident afterward preyed on Glickhikan's mind (Heckewelder knew him well) to the end of his days. He describes the torture, on Captain Pipe's orders, of Colonel Crawford, who had been captured on an expedition against Upper Sandusky undertaken in company with the notorious Williamson, the man responsible for the murder of ninety Christian Indians, mostly women and children, at Gnadenhütten, Ohio. Williamson escaped. Captain Pipe decreed that Crawford should be punished in his stead.

Heckewelder describes also acts of chivalry, like that of the chief who halted his war party while a baby was safely borne by a white woman prisoner in a shelter of bark prepared for the occasion. The chief himself provided what was necessary in the way of fire, water, and Indian remedies. He stood on guard at the door. His principal anxiety was occasioned by a renegade white man who wanted to drown the child.

"The moment I miss the child," said the chief to this person, "the tomahawk will be in your head."

Heckewelder is a good reporter, as reliable as we can find in his day—reliable that is, when he is recording what he himself has seen and heard in direct, and particularly in casual, contacts. Nowhere outside of his travel diaries do we find a better picture of a period that has suffered some neglect in historical study, the transition of the border lands from brown ownership to white. The "Ohio country" was then occupied—for the most part pleasantly, though epsiodes of violence have had far the better press—by both races together. As we accompany Heckewelder on the path between Fort Franklin and Meadville, we meet an Indian of whom Heckewelder inquired the way to shelter for himself and his horse, he having been caught unawares by the early November dusk in a country that was strange to him. The Indian, who had a gun in his hand and a deer on his shoulder, was glad to show the way to Smith's cabin. It seems he had bought his gun from Smith on credit and was bringing in the deer in part payment. Heckewelder and his new companion went on together, conversing happily, each being pleased to find someone with whom he could talk. In personal contact, the good missionary forgot that his companion was a member of the detested Six Nations. The Indian was a Seneca who knew no English. Heckewelder did not speak Seneca. But they found a common medium in the Delaware tongue (of which the Indian spoke the Munsee dialect), the *lingua franca* of these woods. At Mr. Smith's, where, we are told, "the meat was very à propos," Heckewelder found good accommodation, and served as the Indian's interpreter. On his return from this same expedition, which he had made to Le Bœuf, he stopped for the night at a house (Plummer's) not far north of Franklin, where a party of Senecas also arrived. The men put on a dance, to which their women folk sang an accompaniment. Though these were Mingoes, no one lost his scalp. The music, indeed, served as a "cradle song" and helped Heckewelder, who was in another room, to sleep.

On his journey east from the Cayaga River with his wife and two-year-old daughter, Anna Salome, he witnessed an interesting test of the efficacy of Indian medicines. One of his party, an Indian, who had been out looking for the horses, came back to camp apparently dying from a spider bite—eyes swollen almost shut, body covered with red spots, heart under painful compression. He was given an emetic, a concoction of gunpowder, tobacco, and rotten leaves. It worked. A few hours later, the man was well enough to be lifted on to a horse and taken on with the rest of the party.

As we follow John Heckewelder on his travels, our attention is drawn to Indian pictures adorning the walls of the forest. While not as obtrusive as modern billboards, nevertheless the painted trees

—peeled of their bark and then inscribed with messages in charcoal and ochre—were familiar sights. Among Indian travelers the instinct for communication with their kind was not balked by the primeval silence surrounding them. Approaching the mission village of Petquotting, Heckewelder found "a good signpost" in the words "Christ's blood and righteousness" written with charcoal on a peeled tree in the Delaware language. This, of course, was exceptional, both in manner of writing and in evangelical content. More often these communications were in the nature of hunters' itineraries or war bulletins. Not infrequently the trees bore pictographic histories of military expeditions, in which a surprising amount of detail was conveyed by a few strokes. After the French and Indian War, and again after the Revolutionary War, many such inscriptions in nature's Hall of Fame were removed by the settler's axe. One of the best examples of such tree scripts is described fully by Abraham Steiner and Heckewelder, with an interpretation made by Indians who were with them at the time, on this same Petquotting journey of 1789:

> At noon we rested on a high bank. Here was a peeled tree, on which during the late war a great warrior had inscribed his deeds with charcoal and redstone. We had the Indians explain it to us. On one side 7 muskets were represented, lying one upon another. This meant that 7 warriors had gone from there to war. On the other side was a turkey, to note that the chief had been of the Turkey Tribe. Beside it were 8 heavy diagonal bars, one over the other, meaning that the chief had made so many expeditions. In the lowest bar were 4 arrows, in the second 2, in the 7th two, the explanation being that on each occasion so many of his men had been killed as there were arrows through the bar. The first and seventh bars had each another arrow which, however, did not go through. These arrows indicated so many wounded. The 6th and 7th bars were drawn together with a line at the end. That is to say, the warrior, after the 6th expedition, had turned back from this point and gone out again for the 7th time without returning home. Beside lay 6 men one upon another, the feet higher than the head, indicating how many white people this war party had killed." [1]

[1] "Journal of Br. Abraham Steiner with John Heckewelder from Bethlehem to Petquotting on the Huron River near Lake Erie and return 1789": Archives of the Moravian Church, Bethlehem. Quoted by permission of the Board of Elders of the Church of the United Brethren in the United States of America, Bethlehem, Pa. Not to be reproduced without further express permission. A microfilm copy of this journal is in the Library of the American Philosophical Society.

The Indians whom Heckewelder met were troubled in their minds by the pressures of the new time. Some were for adopting the white man's way, while others were for rejecting it. The Munsee Indian, Snake (Mannittohalichk), told Heckewelder he "wished that the Indians might live and work like the white man," but that "the old Indians were against it." Many adopted the white man's religion, and, in their sensitive response to its duties and potentialities, put most white practitioners of the faith (such at least as were found in these border areas) utterly to shame. A very few tried the white man's religion as a new charm, and, finding it ill-adapted to their aims, soon dropped it—like the good fellow whose two scripture verses, learned by heart, proved themselves, in a two-month's trial, inadequate to his hour of temptation. Others, like Antony, though deeply anchored in the new faith, found their confidence shattered by the murder of their wives and children at the hands of professing Christians.

Contrary to the white man's all-but-ineradicable belief, the Indians were not, as a rule, trigger-quick in the matter of revenge. It was a constitutional maxim (though not one recorded by Heckewelder) of the Six Nations that bloody provocation was not to be responded to in kind unless it were three times repeated. A close student of Indian revenges will be surprised to find how long, how patiently, and often with what genuine (and generous) tact, Indians of whatever nation sought to keep the peace. It was while Heckewelder was at Fort Harmar that a drunken soldier tried to kill an Indian with a tomahawk. The man was courtmartialed and sentenced to receive a hundred lashes. When the chiefs learned of it, they presented themselves before the governor with entreaties that the man be let off. They would not leave until promised that the punishment should be remitted—which it was, on condition that the soldier return the Indians thanks. The incident left good feeling on both sides.

These and a thousand more such happenings, encountered casually, are found recorded in Heckewelder's manuscript journals. Much of the same kind of material is found printed in his *History of the Indian Nations,* and also in the *Narrative of the Mission of the United Brethren Among the Delaware and Mohegan Indians, from Its Commencement, in the Year 1740, to the Close of the Year 1818. Comprising All the Remarkable Incidents Which Took Place at Their Missionary*

*Stations During That Period. Interspersed with Anecdotes, Historical Facts, Speeches of Indians, and Other Interesting Matter* (Philadelphia, 1820). This latter work incorporates his personal account, written soon after the event, of his capture by Captain Pipe. It tells also of the massacre, committed by white men, of the Christian Indians at Gnadenhütten. The original manuscript of this journal, entitled "Narrative of the Indian Mission on Muskingum: Captivity and Murder," contains some valuable details not found in the printed version. The best things in both these works, the *History* and the *Narrative*, come from his early notes. Heckewelder is by nature a better reporter than commentator. He is most worthy when closest to the event.

That, indeed, is the key to John Heckewelder's reliability. When he writes about what he knows at first hand, he is trustworthy. The emotional mists that sometimes rise before his eyes and make his aim unsteady, seldom bother him on his own home grounds. We must grant that he did have his prejudices and that he allowed them sometimes to color his vision. Like the great Samuel Johnson (whose name is a symbol of good sense and integrity) he enjoyed certain fields of intellectual activity in which prejudice, like a young colt, was allowed to frisk in freedom. What the people of Scotland were to Johnson, the Mingoes were to Heckewelder. Yet Johnson, with all his dislike of foreigners, was sound in his attitude to *individuals* of whatever nation. Boswell, son of Lord Auchinleck, was his greatest friend. It is the same with Heckewelder. He had no good word to say about the Six Nations as a whole. But Brant's Son, when he ran into him at Fort Harmer, he recognized as a "distinguished, modest" gentleman. And at "Brant's Town" (Brantford, Ontario) in 1798 he enjoyed the company of the great Colonel Joseph Brant (Thayendanegea) himself, victor of Cherry Valley, the Minisinks, Canajoharie, and the Big Miami, and also translator of St. Mark's Gospel into Mohawk.

But how are we to know when John Heckewelder *is* writing about what he knows? The question is assuredly not one to be dodged. We might as well face the fact that Heckewelder's work is not meat for babes. He is not to be read by those who, in scholarship, have yet to cut their eye teeth. To initiates, on the other hand, that is to say to persons who, where Indians are concerned, know the difference between a hawk and a handsaw, he is nutritious and not indigestible.

His wayward moods are *well staked out.* Wherever, as already noted, his competitive instincts (often generously set in motion by a desire to aid the under dog) are seriously engaged, as in the case of the Delawares as against the Six Nations, we find him beyond reason. We must then accept (in the language used by Johnson to *Ossian's* Macpherson) not what he says but what he can prove. When he is in such moods, he is usually so outspoken that there is little likelihood of our being deceived. His prejudices, like Johnson's, sufficiently announce themselves.

Who would read Johnson for a dispassionate estimate of the Scots? Why turn to Heckewelder for an understanding of the Six Nations? We read Johnson on Scotland and Heckewelder on the Mingoes for amusement. When Heckewelder presents a lengthy string of evidence (on the sole authority of a respectable Delaware) to convince us that the Indians who committed the Penn's Creek murders, by which the horrors of Indian warfare were unleashed on Pennsylvania in 1755, were not our avowed enemies, the Delawares and Shawnees under French influence in the West, but "some wicked Mingoes or Iroquois," we need only smile. Not all Luke Holland's (the Delaware informant) attestations nor the adminicles of crushed moss, broken twigs (how Cooper must have loved this!), scattered leaves, disturbed pebbles, can persuade us that the Delaware (to whom Heckewelder was already indebted for finding a lost watch of his in the woods), though in the normal courses of his life he may have been "honest, intelligent and a lover of truth" as Heckewelder assures us he was, did not sometimes sacrifice his probity to his sense of humor. Luke Holland must have known that, in Iroquois waters, Heckewelder would rise to any bait.

But when Heckewelder tells us about the generosity of the Wyandot warrior, one of his captors at Gnadenhütten, who returned to him his (the warrior's) share of the Heckewelder booty—"a new castor hat, a pair of stockings, and a cravat"; when he tells about Indian meals and Indian cooking (Delaware cooking, that is—we are on less sure ground when he writes about the Six Nations' menu, asking us to believe that these barbarians easily satisfied themselves with unwashed deer's entrails); when he tells of the grief of Joshua over the murder of his two young daughters by Williamson's men at Gnadenhütten; how the Delaware warrior stopped the Indian who was about to rob Heckewelder of his shirt, driving him off with the

taunt, "You are always in the forefront when there is no danger!"; of Shingas, whom Heckewelder knew, a man small in stature "but in point of courage and activity . . . said never to have been exceeded by any one"; of the visitors who came almost daily from Gekelemukpechink, the seat of Delaware government; how, on the death of White Eyes, the problem of succession—the proper incumbent being then too young—was settled by the appointment of Killbuck, Big Cat, and Tetepachksi to officiate in his stead; the story of the Indian girl, a mission probationer at the time the British Indians took Heckewelder prisoner, who resolved to rescue the missionaries and for this purpose stole Captain Pipe's horse, escaping on it, though pursued, to Pittsburgh where she hoped to raise the garrison—when Heckewelder writes about such things as these which came under his eyes, we can rely on him.

The Indians we meet in these authentic sketches, written by one who lived among them, are a far cry from Cooper's. For that matter, they are far enough removed from some of our own fantasies. We today, by evidence gathered on Indian reservations from people who are the product of more than two hundred years of intermarriage, acculturation, and popular obloquy, try to figure out what the Indian of 1700 and 1750 must have been like. We are like photo-topographical surveyors in the mountains, who take shots of a difficult peak from below at different angles, and then, by the method of triangulation, try to estimate its height and map its slopes without ever having set foot upon its rocks and ice. Heckewelder actually made the climb. He stood on the top and made notes of what he found. His notes do not take the place of our reckonings, but they are an aid which we should be foolish to ignore. Some of his jottings made in the field are indistinct. A few pages may have to be discarded. But what remains is priceless: the reports of a man *who was there*.

If we fail to take advantage of this admittedly uneven but, to the discriminating student, infinitely rewarding primary source, let us be quite sure that what we are motivated by is a true scholarly caution mixed with commendable modesty—a fear of falling into error through our own lack of skill in distinguishing between what is true and what is false in the work of John Heckewelder; and that it is not rather fear of submitting our own preconceptions of the Indians (derived in part, most assuredly, from the Cooperized Indians of our own or a past generation's childhood) to the scrutiny of someone who had actually seen Shingas the Terrible sitting by himself near his wife's grave, and who knew the girl who rode Captain Pipe's horse.